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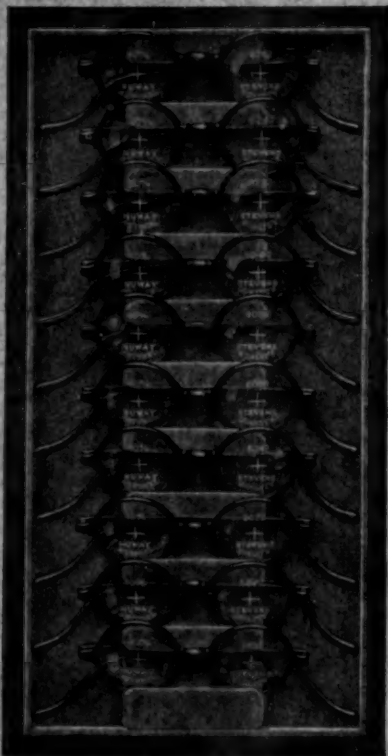
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CAUSES OF BITEMPORAL CONTRACTION OF THE VISUAL FIELD.

EMORY HILL, M.D., F.A.C.S.

RICHMOND, VA.

Attention is called to the different forms of impairment of the visual field and their significance. They may occur in hypopituitarism with or without convulsions, with pituitary headache, pituitary disturbance in relation to infection, hyperpituitarism, cerebral syphilis, hydrocephalus and tumors. Reports of forty cases were presented with this paper. It was read at the meeting of the Colorado Congress of Ophthalmology and Oto-Laryngology, July, 1922.

Striking evidence of intracranial disease is the bitemporal hemianopsia which results from an enlargement of the pituitary body, pressing upon and destroying the medial fibers of each optic nerve at the chiasm. For a long time this peculiar field was accepted as proof of pituitary tumor, and without it such tumor was rarely diagnosed. That so extreme damage to the visual fibers is a late occurrence, and not necessary to the diagnosis of pituitary enlargement, was pointed out convincingly by Cushing in his work, "The Pituitary Body and Its Disorders," in 1912. He emphasized the earlier manifestations of pressure upon the chiasm in the form of upper temporal "slants" in the visual fields, especially for colors, due to a lesser degree of pressure upon the medial fibers of the chiasm from below. Increasing knowledge of the behavior of the endocrinal glands has led to the recognition of numerous disturbances of the pituitary body both in function and in size, disturbances originating in this structure and secondary to lesions elsewhere. In fact, the production of pituitary disease as a consequence of neighboring lesions is a matter of more frequent occurrence, if not greater importance, than primary pituitary tumors.

Temporally contracted fields, particularly in the upper quadrants, are usually found when the pituitary gland is enlarged. Tendencies to homonymous

hemianopsia are fairly frequent, and other types of field impairment are occasionally met with. These various fields are summarized in the American Encyclopedia of Ophthalmology, vol. 13, p. 10230. If one approaches the subject, not from the standpoint of gross enlargement of the pituitary gland, but from the standpoint of the visual field changes indicative of pressure upon the optic chiasm, one is impressed with the fact that such changes are by no means infrequent in a variety of neurologic disorders. It has been my privilege to study a number of these cases in cooperation with the neurologist and internist, who have had a keen appreciation of the value of perimetric studies. My sincere gratitude is due to Dr. Beverley R. Tucker and Dr. R. Finlay Gayle, Jr., for the opportunity of studying their neurologic patients and utilizing their records for the case histories herein included, to Dr. Douglas Van der Hoof for the use of his material in the medical reports of certain cases, to Dr. C. C. Coleman for his criticism as well as case histories from the standpoint of the neurologic surgeon, and to Dr. D. D. Talley, Jr., for his interpretation of X-ray pictures, based upon an exceptionally large experience in head cases. A few of the cases reported were seen primarily by me, their chief complaint being apparently associated with their eyes; but naturally the majority were referred by colleagues for ophthalmologic examination in connection with the diagnosis of neurologic disorders.

There is no accepted classification for such a group of cases. Certain clinical pictures cannot be so definitely grouped as to satisfy all neurologists. I am well aware that some combinations of symptoms and physical signs would be held to justify different diagnoses by different neurologists; therefore, the classification which I have made of the cases here presented is tentative and offered for convenience. A case denominated hypopituitarism might be considered one of pituitary tumor; a case accepted as pituitary tumor cannot always be verified by operation or autopsy. The hazard of surgical intervention in the cranial cavity does not warrant exploration at so early a date in this type of disease as might be justified in an obscure abdominal disease. Indeed, it is a question of grave concern whether certain cases should be advised to have intracranial exploration in the presence of obscure crippling lesions. It is becoming possible, however, to approach the question of intracranial surgery with more confidence than heretofore, thanks to the remarkable advances made by surgeons who not only possess a high degree of technical skill but have a first hand knowledge of neurology as well. The advent of the neurologic surgeon must be counted among the distinct gains of modern medical science. We may hope to reach more satisfactory conclusions in regard to the exact nature and location of many intracranial lesions in the future. At present there seems to be a considerable variety of conditions which produce sufficient pressure upon the visual fibers at the optic chiasm to cause limitation of the temporal fields of vision, conditions not always conforming to the type of gross pituitary disease with which such fields have usually been associated in our minds.

That an intimate relationship exists among the various glands of internal secretion is a consideration of paramount importance, and it must be remembered that pituitary cases are such only in the sense that the pituitary gland appears to be the one chiefly affected, but not the only one affected. It is important, likewise, to remember that any conclusions reached today, in regard to the effects of endocrin disorders and treat-

ment directed thereto, are tentative. We have as yet too little definite knowledge of this complex subject to warrant dogmatic statements. The very lack of certainty justifies a serious attempt to present our experiences and correlate our observations, to the end that some order may eventually come out of the present chaos of opinion and conjecture. Another important consideration is that all degrees of variation in stature, metabolic processes, mentality, and personality exist according to the relative activities of the glands of internal secretion. We cannot draw a sharp line of separation between normal individuals, on the one hand, and those with abnormal endocrin glands on the other hand. Just as complete bitemporal hemianopsia represents an extreme and rare damage to the optic chiasm, so the pronounced and highly destructive disorders of the endocrin glands represent only a small part of the cases of altered structure and function which concern us. Slight degrees of damage to the fields of vision correspond to the less extreme degrees of pituitary disorder and other lesions productive of pressure upon the optic chiasm.

The purpose of this communication is to discuss 40 cases seen during the past three years which present visual fields indicative of pressure upon the optic chiasm. They are not selected cases, except in so far as they come chiefly from the practice of neurologists who have been especially interested in endocrinology. A few additional cases have been omitted because opportunity has been lacking to obtain more than a casual study of them.

HYPOPITUITARISM.

The majority of pituitary disturbances fall into the class of deficiencies in the function of one or the other lobe of the gland, or of both lobes; at least this is true at the time when they come under observation. Some cases give no evidence of having had an excessive pituitary secretion at any time; many cases give quite definite evidence of a past overfunctioning, but this has been superseded by a state of deficiency; even the very striking examples of gigantism and acromegaly pass into a state of pituitary deficiency in the long run.

Cases exhibiting positive X-ray evidence of an enlarged sella turcica with destruction of the clinoid processes, interpreted as due to an enlarged pituitary body, may be in a state of deficient glandular activity because of pressure atrophy of secreting tissue in a tumefied gland.

Cushing¹ laid stress upon the following symptoms of hypopituitarism: high sugar tolerance, subnormal temperature, slow pulse and low blood pressure, drowsiness and asthenia. A low per-

compression of the nerve sheath prevents the papilledema which frequently manifests increased intracranial pressure from space restricting lesions elsewhere in the cranial cavity. A papilledema can be superimposed upon a primary atrophy when general increase of intracranial pressure has followed a pituitary growth. Slight degrees of engorgement of the intervaginal spaces may bring about blurring of the disc edges, edema and proliferation of glial tissue upon the

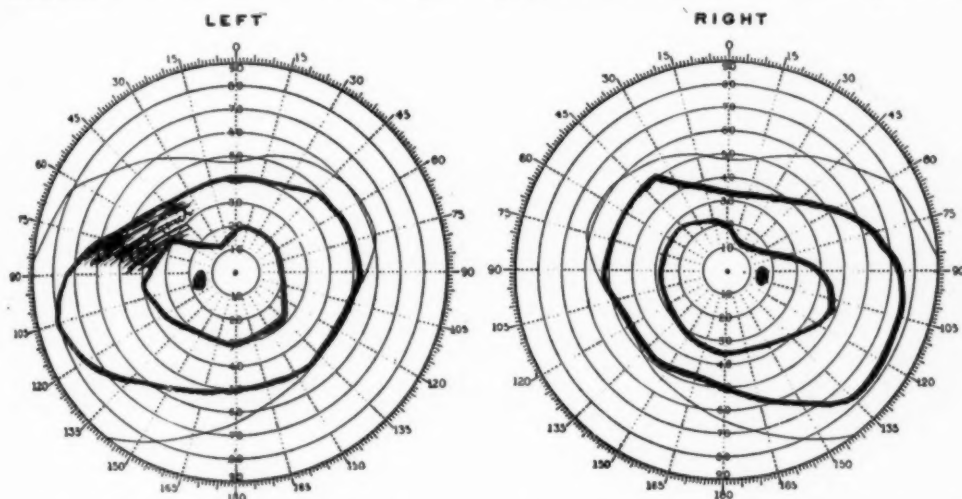


Fig. 1. Illustrating upper temporal slants, upper temporal scotoma and enlarged blind spots, in a case of acromegaly and cerebrospinal syphilis with ultimate hypopituitarism. White and red fields.

centage of blood sugar is today regarded as significant, and this observation has largely replaced the estimation of sugar tolerance. Neighborhood symptoms of importance are revealed by the X-ray picture of the sphenoid and by the eye examination. Diminished capacity of the sella turcica, with large clinoid processes encroaching upon the outlet of the sella or bridging it over, points to a small gland; the opposite condition of abnormally large sella with destruction of the clinoids points to an excessively large gland. Erosion of the tips of the clinoids and of the floor of the sella and of the dorsum also results from enlargement of the pituitary body. Such pituitaries may have passed from a hyperfunctioning to a hypofunctioning state. Primary atrophy is the most common expression of damage to the optic nerves by a pituitary overgrowth. The early

discs. Impaired function of the extraocular muscles, anosmia, epistaxis and uncinate attacks are less frequent neighborhood symptoms. General pressure symptoms are those commonly associated with intracranial tumors. Symptoms of secretory deficiency are skeletal, consisting of a small frame, stubby hands and tapering fingers; cutaneous, consisting of vasomotor mottling, pigmentation, diminished growth of hair, dry skin and hair; metabolic, consisting of increased body fat, especially in the shoulder and pelvic girdles, lowered blood sugar and lowered blood pressure; and sexual, consisting of deficient growth of the sexual organs, absence of sexual power and desire, amenorrhea and absence of the secondary sexual characteristics in early cases, and retrogressive changes in these respects in cases developing in adult life. Not all of these changes are primarily

due to the pituitary deficiency; other glands of internal secretion are responsible, but these evidences of polyglandular disturbance exist where the pituitary is in a state of deficiency, and hence are common manifestations in hypopituitarism.

Twenty-seven cases in this series are classed as hypopituitary. Nineteen had normal eyegrounds; three had primary optic atrophy, a fourth showed pallor of the temporal quadrants of the discs; two had hyperemic discs with blurred edges, one had discs covered by exudate, and one had choked discs. Sixteen cases showed upper temporal slants in the visual fields; fourteen had enlarged blind spots; four showed upper temporal quadrant defect for red in the field of one eye; four showed upper temporal quadrant scotoma; there was one example of each of the following field defects: bitemporal contraction as great below as above, homonymous hemianopsia, concentric contraction, tubular fields. Radiographic findings were as follows: twelve had abnormally small sellae, two had large sellae, eleven sellae had very narrow outlets, nine had roughening of the tips of the processes; five fossae were normal, and four cases did not have X-ray pictures. One skull showed the mottling characteristic of increased intracranial pressure.

Headache was a symptom in 19 cases; nausea and vomiting in 4 cases; convulsions in 12. The following symptoms of pituitary deficiency were noted: scant perspiration in 5 cases, low blood pressure in 9, low blood sugar in 6, increased pigmentation in 4, dry skin in 3, scant body hair in 5, clubbed fingers in 6, low basal metabolism in 4, obesity in 5, spaced teeth in 2, glycosuria in 1, drowsiness in 6, voracious appetite in 3.

The value of certain of these data in establishing the existence of a pituitary deficiency may be questioned. For example, sugar tolerance is not regarded as so important today as it was a decade ago; radiographs of the sella turcica are interpreted variously by different roentgenologists; some would deny that there is any correlation between pituitary function and bony alteration of the sphenoid; obesity and low basal metabolism may be preempted by the

thyroid. It is not possible to discuss these questions here. The usual information sought and recorded by the neurologist has been presented without any attempt to evaluate its importance. Hypopituitarism, as now understood, is apparently the most prolific source of temporal contraction of the visual fields. Certain special features appearing in hypopituitary cases deserve separate mention, namely recurrent convulsions, pituitary headaches, and infections.

RECURRENT CONVULSIONS WITH HYPOPITUITARISM.

Epilepsy is a disease shrouded in mystery. With all the literature accumulated during the centuries dealing with its manifestations, which are easily recognized, it remains largely a disease of unknown etiology, if we except the localized convulsions due to sharply defined pressure in the motor cortex, to which Jackson's name has been appended, and certain cases of syphilitic, traumatic, and toxic origin. Some neurologists affirm that true epilepsy cannot be traced to any known cause. There has been, however, a serious effort in late years to establish some classification of epilepsy on the basis of etiology. Among the varieties of this disease has emerged the so-called pituitary epilepsy. Whether this is warranted and will be a permanent classification, it is not for the ophthalmologist to say. It is, nevertheless, worthy of note that neurologists so competent as Weisenburg, Clarke² and Tucker³ describe as pituitary epilepsy a condition characterized by convulsive seizures of an epileptiform nature in individuals who show the generally accepted evidences of deficient pituitary secretion, and are benefited in respect to frequency and severity of convulsive attacks by the administration of pituitary extract. Cushing¹ offers the following reasons for associating the hypopituitary state with epilepsy: the cortex of hypophysectomized dogs is more sensitive to stimulation than that of normal animals (Horsley); a tendency to convulsions was noted in some of his hypophysectomized animals; epilepsy follows cranial injuries, and in such injuries the pituitary is sometimes damaged; epilepsy frequently occurs in individu-

als who exhibit a state of pituitary deficiency; the secretion of the posterior lobe apparently enters the cerebrospinal fluid and thus reaches the brain; a scar or tumor preventing the escape of this secretion might alter the stability of nerve cells normally subjected to the secretion; pituitary gland substance modifies the epileptic attacks.

We are not so much concerned with the question whether these cases should be called epilepsy as we are with the fact

criteria and pituitary therapy may or may not give results; it is worthy of trial in so serious a condition which is notoriously resistant to other treatment.

Among the cases of hypopituitarism in this series, 12 suffered from recurrent convulsions. In 4 of these the onset of convulsions was at puberty; five had normal radiographic pictures; the other seven showed abnormalities of the sella in the form of small size and roughening of the tips of the clinoids, except for

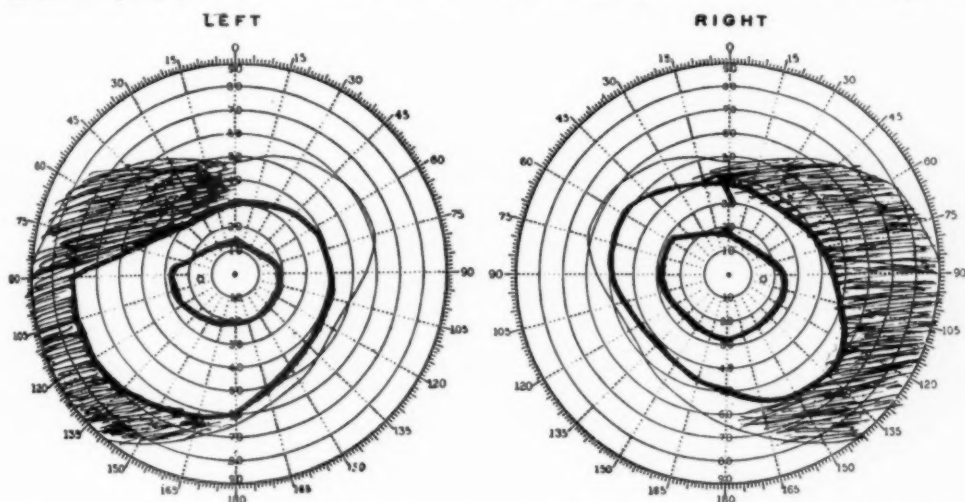


Fig. 2. Illustrating temporal relative scotomas ("zones of deadened perception") in a case of hypopituitarism. White and red fields. Recovery of normal fields after glandular therapy.

that a most distressing derangement of mind and body can be offered some measure of relief by therapy based upon the diagnosis of hypopituitarism; and among the evidences of pituitary disturbance are characteristic changes in the visual fields consisting of temporal contraction, especially in the upper quadrants. To avoid confusion with the so-called idiopathic epilepsy, and to discourage undue zeal in the use of glandular therapy in epilepsies, it may be well to use the term "recurrent convulsions" for the present, as Tucker has suggested. When these convulsions begin to appear during adolescence, in individuals who show abnormality of the sella turcica revealed by X-ray picture, the visual field contraction indicative of pressure upon the optic chiasm, and the clinical signs of hypopituitarism, we have the typical condition calling for pituitary therapy. Other cases fulfill one or more of these

two cases of very large sellae. In one of these, precocious development in childhood suggested early overfunction of the pituitary; in the other there was evidence of increased intracranial pressure and the bony sella was largely absorbed; both gave clinical signs of hypopituitarism. Ten had normal eye-grounds and normal visual acuity; two had subnormal vision and primary optic atrophy. Seven showed bilateral upper temporal contraction, 4 showed unilateral upper temporal contraction, and one had a tendency to homonymous hemianopsia. In one there was a right upper temporal scotoma for red. Six had enlargement of the blind spots.

Conspicuous signs of a hypopituitary state were long tapering fingers, low blood pressure, low blood sugar, minus basal metabolism, dry skin and scant perspiration. One case with nephritis had a high blood pressure. Three cases

gave quite definite evidence of a previous excessive pituitary functioning; only one had suffered severe head injury.

While this communication is not primarily concerned with therapeutic results, the importance of the subject warrants some reference to the outcome of treatment. This series includes 12 cases of recurrent convulsions in individuals who are believed to have hypopituitarism; they are not limited to the typical examples of so-called "pituitary epilepsy." Such cases are not easy to follow, nor do they always persist in treatment. The necessity of breaking the convulsive habit makes it impractical to limit therapy to pituitary extract. Sedatives, of which luminal is now a favorite example, are given together with pituitary extract, and the therapeutic test is not so rigid as we should desire. In this series one case has not been heard from; three have shown practically no improvement. The other eight have improved, to the extent of going for longer intervals with fewer attacks. One reports 3 light attacks in 7 months in contrast to 1 or more attacks per month before treatment; one has had 1 attack in 11 months instead of 3 in 4 months as formerly; one has had 1 attack in 2 months instead of 5 daily; one has gone 4 months without an attack; one has had no attack in 6 months, whereas she formerly had 1 or 2 attacks associated with the menstrual period for years. One case has been nearly free of attacks for 3 years; he exhibited the status epilepticus when first seen. A striking example is that of a man who had convulsions varying from one a day to one in 3 weeks. He has been free of major attacks for 4 months, except for 2, which occurred when he had been without pituitary extract for a few days, but was still taking luminal. It is fair to state that the dosage of luminal given in this series of cases was smaller than would ordinarily suffice to control convulsions.

PITUITARY HEADACHE.

In 1919, Irving Pardee⁴ called attention to a type of headache characterized by deep seated bitemporal pain, in individuals who show dyspituitarism as indicated by changes in sugar tolerance, bony formation of the extremities, distribu-

tion of hair, and excessive fatigue with drowsiness. He laid much stress upon alteration in the sella turcica as shown by radiographs. He stated that whole gland extract effects a positive cure, except when a neoplasm is present. He found contraction of the temporal fields occasionally and primary optic atrophy rarely.

Such cases are substantially hypopituitarism with headache as a conspicuous symptom. Because of the prominence of the headache and its intractable character under any of the usual forms of treatment, it seems desirable to discuss these cases separately. The pain is described as deep seated in the region of the temples. The patient points with the fingers inwards and downwards from the temples in the direction of the base of the brain. Sometimes the sensation is described as a feeling of water splashing or of a marble rolling in the position of the sella turcica. Such cases have bitemporal contraction of the visual fields, usually of slight extent, but with the characteristic upper temporal slants due to pressure upon the chiasm from below. They show likewise the evidences of a hypopituitarism and are benefited to a marked extent by pituitary extract administered preferably by hypodermic. Whether glandular extracts, other than thyroid extract, administered by mouth are of value is a disputed question, which this is not the place to discuss. It may be said that hypodermic administration is the most effectual; liquid preparations probably are superior to tablets. Three cases here reported seem to prove that oral administration is of value despite the denial of some authors.

Of 27 hypopituitary cases, 17 complained of headache. Nine of these described bitemporal pains. Six of the nine also suffered from epileptiform attacks, and in three of these severe bitemporal pain was experienced in connection with the attacks.

One patient described a sensation of "water rolling" and one of a "marble rolling" in the region of the sella turcica. Three additional cases, not in the hypopituitary group, complained of bitemporal pains.

The following cases illustrate pituitary headache:

CASE 28, a woman of 35, had deep seated, long continued bitemporal pain and a sensation of a marble rolling at the base of the brain. She was drowsy and unable to carry on her work as a nurse. She had an extremely small pituitary fossa with narrow outlet. Fields showed upper temporal contraction and enlarged blind spots. Under treatment with whole gland pituitary extract and ovarian substance, she recovered completely and her fields lost the upper temporal slants.

quadrants. He had regained perfect health on the use of whole gland pituitary extract when heard from 3 months and 8 months later.

Pardee's description applies to these cases except that temporal contraction of the visual fields should be a regular finding and not merely occasional. Optic atrophy is not frequent, nor is extreme narrowing of the fields; but careful perimetry, using small test objects, will reveal upper temporal slants which are missed in a casual charting of fields.

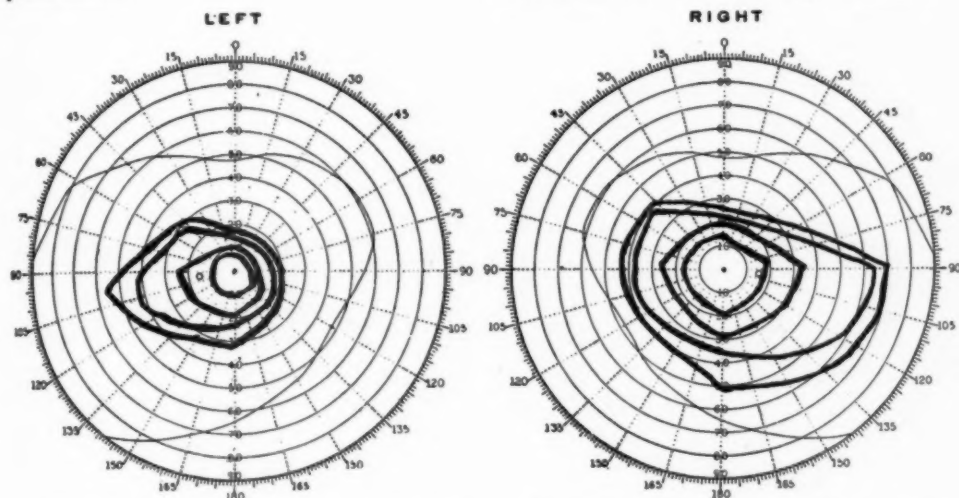


Fig. 3. Illustrating progressive narrowing of temporal fields with smaller white test objects. A case of polyglandular (including pituitary) deficiency; 10, 5, 2 and 1 mm. white test objects used, as suggested by Cushing and Walker.

CASE 14, a woman of 27, complained of recurrent convulsions and bitemporal headache, with a sensation of water rolling in the region of the sella turcica. She gave evidence of a hypopituitarism and showed a pronounced upper temporal slant in one field. X-ray showed mottling of the skull and a large pituitary fossa. Her headaches and convulsions ceased after the use of pituitary extract. There was evidence of pituitary tumor in this case, and her improvement is probably not permanent.

CASE 5, a man of 24, had headaches not definitely localized. He was hypopituitary, had a primary optic atrophy, extremely small pituitary fossa with an outlet almost bridged over, with roughened and thickened tips of the posterior clinoids. Form fields were normal in extent, but there were large absolute scotomas for red in the upper temporal

PITUITARY DISTURBANCE IN RELATION TO INFECTIONS.

In addition to the history of various infections in many cases of this series, four cases gave evidence of infectious processes which seem to have had a definite bearing upon their subsequent cerebral symptoms.

CASE 11, male, aged 53, had severe headache since an attack of influenza, some vertigo, mental dullness and irritability; smell was impaired and the hearing of the left ear defective. Spinal fluid showed ++ globulin and 15 lymphocytes, Wassermann negative. The discs were covered by a thin exudate; there was contraction of the upper temporal fields and enlargement of the right blind spot. An encephalitis following influenza was probably the cause of his symptoms.

CASE 36, male, aged 38, had headache, vertigo and tinnitus. Fundi were normal; fields showed upper temporal contraction. X-ray showed an abnormally large pituitary fossa. Operation for right frontal and double ethmoidal sinusitis resulted in relief of symptoms.

CASE 24, male, aged 40, had dizziness, headache, diplopia and vomiting after an attack of influenza. X-ray showed a thick skull, and a very large and deep pituitary fossa with wide outlet and roughened tips of the anterior clinoid processes. Eyegrounds were normal. He had abscessed teeth and infected tonsils. Marked improvement followed cleaning up of the mouth infection and he refused tonsillectomy. Seven months later he grew worse, had severe headache and attacks of rigidity and aphasia; vomiting, at times projectile. Fields now showed upper temporal slants for red and an enlarged blind spot in the left. Tonsillectomy was performed, with relief of symptoms for a time. He probably has a tumor.

CASE 6, male, aged 35, had dizziness, nausea and headache. His right eye was amblyopic, the left had a normal fundus but upper temporal limitation of the field. Bárány tests indicated a lesion of the left vestibular apparatus, which was thought to be of toxic origin, probably due to infected tonsils. No evidence of increased intracranial pressure or acoustic tumor was found.

Two of these cases showed symptoms following influenza, and one gave considerable evidence in favor of encephalitis. Three had definite infections, in one sinusitis, in one infected tonsils and teeth, in one infected tonsils. One case appeared to be entirely relieved by removal of infection, and another temporarily relieved by extraction of bad teeth, and again relieved by tonsillectomy, tho it is believed that he has a tumor. All four showed perimetric evidence of pressure upon the chiasm.

It seems quite certain that an encephalitis can attack the pituitary gland, and a meningitis about the chiasm can produce pressure giving rise to bitemporal contraction of the visual fields. The relation of pituitary enlargement to remote infections is not so definite, but it is reasonable to suppose that bacteria or

toxins in the circulation may cause disturbance of this gland, just as infected tonsils produce thyroid disturbance.

HYPERPITUITARISM

Overfunction of the pituitary gland is generally accepted as the cause of gigantism and of acromegaly. Normal individuals exhibiting excessive growth in childhood are giants; individuals who develop excessive growth of the acral parts after adolescence are acromegalic. While such cases eventually suffer from a pituitary deficiency, they may present chiefly the evidences of excessive pituitary function, especially if seen in early life.

Three cases in this series are strikingly hyperpituitary.

CASE 29, was a boy of 16 who suffered from pituitary headaches at the age of 13, and petit mal attacks at 15. His hands and feet had grown rapidly, his hair was coarse, genitals large, and head acromegalic. A beginning hypopituitary state was suggested by dry skin, low blood pressure, and low blood sugar. Fields indicated pressure upon the chiasm. He was mentally retarded, ill tempered, had a stuttering speech, and showed marked vasomotor instability. X-ray of the head was normal and a primary pituitary tumor was not believed to exist, but rather a neighborhood tumor with secondary functional pituitary changes. Operation was refused and the diagnosis could not be verified.

CASE 13, aged 27, illustrates gigantism; he was 76 inches in height, most of his growth taking place between 12 and 16 years of age, with no increase in size of hands and feet in recent years. He exhibited a profound psychasthenia and had periodic "blank" spells like petit mal. X-ray showed calcification in the pineal region, but no abnormality of the sella turcica. Fields showed peripheral relative scotoma and a homonymous upper right quadrant anopsia.

CASE 20, was a woman of 35, with a history of many neurotic symptoms since sustaining a head injury at the age of 15. She had been excessively fat from the 15th to the 20th year, had a acromegalic head, very long fingers and toes with clubbed extremities, masculine distribution of hair, excessive pigmentation and beard, normal sugar tolerance. Spinal

fluid showed + + + + Wassermann and + + globulin. Fields indicated pressure upon the chiasm.

She was given 6 doses of salvarsan, but did not return for further treatment, and writes that she is no better.

These hyperpituitary cases did not show abnormal sellae upon X-ray examination. It is obviously possible for departure from a normal pituitary secretion to occur without great swelling of the gland which would affect the sur-

to be directly attacked by syphilis, as has been shown in microscopic sections of the gland. Several writers have linked the Froelich syndrome with hereditary syphilis. Cushing¹ has described a gumma of the pituitary body. De Schweinitz⁵ has reported cases in which actual luetic disease of the pituitary was highly probable, and treatment directed thereto was effectual. Calhoun⁶ and Key⁷ have each recently reported a case similarly interpreted.

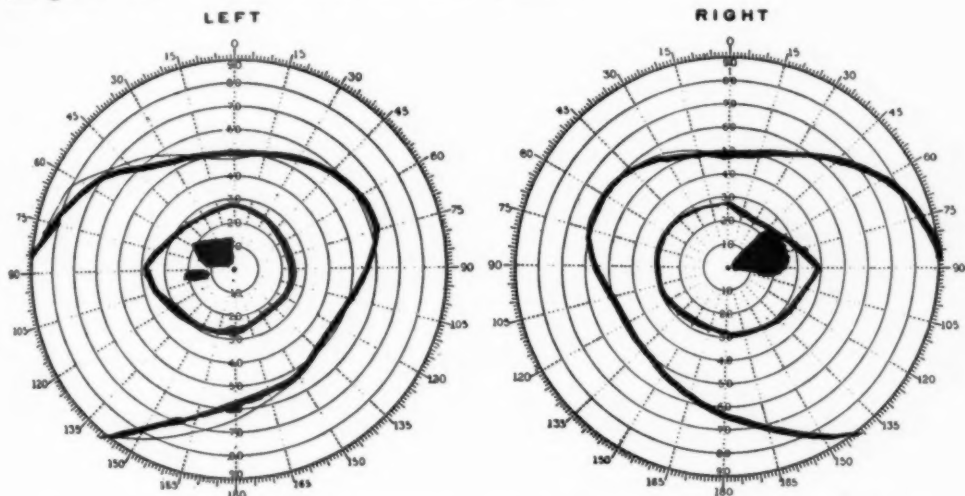


Fig. 4. Illustrating upper temporal scotomas in a case of pituitary headache. White and red fields.

rounding walls, and also possible for a pituitary body to exhibit malfunction without being primarily subjected to an abnormal bony environment. Indeed, the important thing is to recognize slighter pituitary derangements. If our conception of pituitary disease is limited to the extreme examples of giantism, acromegaly and the Froelich syndrome, we shall fail to recognize this class of disease in time to prevent serious damage to vision and health.

CEREBRAL SYPHILIS.

Disturbances in the cranial cavity caused by syphilis may produce secondary pressure effects upon the optic chiasm. Indeed, a basal meningitis or gummatous formation in the meninges in the region of the chiasm is a frequent form of cerebral syphilis, and bitemporal limitation is the most frequent form of visual field defect in cerebral syphilis. It is possible, also, for the pituitary body

Two cases in this series suffered from cerebral syphilis and gave evidence of damage to the chiasm.

CASE 20, has been described as an example of acromegaly. Her complaint dated from an injury at the age of 15, when she fell on the ice and was in a dazed condition for several days. She had + + + + spinal fluid Wassermann. There were bitemporal contraction of the form fields with decided upper temporal slants for red, a large relative scotoma for white in the left upper temporal quadrant, and enlarged blind spots.

CASE 2, a man of 33, sustained a severe injury in the right temple from the kick of a mule 12 years previously. He has had severe headaches, unconsciousness, and emotional upsets when he threatened suicide. Spinal fluid was under increased pressure, with a + + + + Wassermann. Unsteadiness of gait and double ptosis of the lids had occurred. The pituitary fossa was bridged over by

bone and a calcified, round body, 3mm. in diameter, protruded up from the floor of the sella. One eye was amblyopic and divergent; the field of the other eye was contracted, chiefly in the temporal half with a marked upper temporal slant for red. On several occasions headache was relieved by spinal puncture. In Nov. 1919, a right subtemporal decompression was done by Dr. Coleman. A pachymeningitis with increased cerebrospinal fluid was found. Relief followed operation. Central vision of the good eye has been as low as 5/15, but was normal in May 1922, tho the temporal field contracted further, passing thru a stage of recovery of the upper quadrant with large scotoma in the lower quadrant, and finally becoming narrowed to 20° for white and 5° for red. Apparently pressure upon the chiasm from below was relieved for a time, but pressure from above was increased.

It is not possible to say whether the pituitary body in these cases was the site of a syphilitic infection. The first case gave very positive evidence of a hyperfunction of the pituitary in addition to cerebral syphilis. Both cases showed the mental disturbance so frequent in cerebral syphilis, being despondent, one very morose, the other contemplating suicide. Both suffered head injury, and in the second case the findings upon operation at the site of trauma may be attributed to the injury as well as to syphilis. Whether the peculiar bony formation of the sella turcica in the second case was the result of trauma or represents a syphilitic bone disease, or is not related to either, is an interesting question. The connection between trauma and cerebral syphilis, and between trauma and pituitary disease, will bear further investigation. Cushing's reference to such injury as the precursor of epilepsy and pituitary disorder has been quoted; the frequent history of severe trauma in brain tumors is well known; the coincidence of slight trauma with the onset of interstitial keratitis has been noted in a considerable number of cases. By analogy, one thinks of the frequent advent of tuberculous bone and joint disease after injury in childhood.

HYDROCEPHALUS.

Two cases of this series illustrate the effect of internal hydrocephalus upon the

optic chiasm. The fields differed from the most common fields of pituitary enlargement, in that the upper temporal quadrants were not more contracted than the lower. The eyegrounds likewise showed a condition different from the choked disc of increased intracranial pressure and the primary optic atrophy of pituitary pressure.

CASE 31, complained of despondency and fainting attacks. She was mentally subnormal, obese and suffered from headache. Blood pressure and metabolism were low and she was drowsy. Ventriculography showed internal hydrocephalus; X-ray showed a greatly enlarged sella, with erosion of the floor. Fields showed bilateral temporal contraction. Occipital decompression, with breaking up of adhesions which closed the foramen of Magendie, gave marked relief of symptoms which has continued for 7 months. The discs in this case were covered by a small amount of exudate, obscuring the edges; but there was no swelling. The retinal vessels were very tortuous and the veins flattened by arteries at the crossings. Central vision was not greatly impaired. The discs were practically normal 5 months after operation and the fields wider, with no disproportionate limitation of the temporal halves.

CASE 37, was one of communicating hydrocephalus, with enormous ventricles and extremely thin cortex, with large flattened sella and absorption of the posterior clinoids. Vision was greatly reduced, fields very narrow, with greater limitation in the temporal halves. The discs were covered by a thin exudate which did not entirely fill in the physiologic cups; there was a high degree of vascular sclerosis, the retinal arteries being of the "silver-wire" type in the right; there was also a disseminated pigmentation in the retina and one spot of choroidal atrophy. Autopsy showed a chiasm compressed to the form of a broad flat ribbon.

The eyegrounds in these two cases, both young women, suggested a syphilitic infection which was not present. There is no evidence of actual choked disc having existed. Long standing increased intracranial pressure, with choked disc, could scarcely have left almost normal visual acuity as exists in the first case;

and blindness in the second is explained by the tremendous pressure upon the chiasm, rather than by an atrophy secondary to choked disc. It seems probable that some degree of mechanical obstruction is exercised in a hydrocephalus, bringing about a proliferation and subsequent organization of glial tissue on the discs and damage to the retinal blood-vessels; but downward pressure of the third ventricle may compress the optic sheath in time to prevent a high grade of papilledema; thus a picture is presented in the eyegrounds intermediate between a papilledema and a primary atrophy, and differing also from the optic neuritis of an infectious process.

A third case, No. 5, had eyegrounds interpreted as the result of choked discs, but the elevation was not high at any time during the several years when he was under observation, and good vision was preserved. He was definitely hydrocephalic, and presented the Froelich syndrome. While his discs were more altered than those of the other two cases of hydrocephalus, they occupy an intermediate position between the typical pituitary discs and those of brain tumor.

A fourth case, No. 8, had exudates on the discs flush with the retina, with engorged, tortuous veins and very narrow arteries. Fields showed bitemporal contraction which was at times greater in the upper quadrants. Relief was obtained temporarily by spinal punctures and twice for long periods by decompression. Ultimately normal vision was retained in one eye while the other was lost from secondary atrophy. A tumor is suspected in this case.

Unthoff's⁸ series showed only 2.2% of choked disc in internal hydrocephalus; but there is generally some blurring or slight swelling of the discs with subsequent atrophy, or primary atrophy. It may be going too far to say that there is an eyeground characteristic of hydrocephalus, but the impression has been gained that the picture above described is of value in differentiating hydrocephalus from brain tumor.

TUMORS.

Six cases of this series were believed to have tumors. Five had headache, nausea and vomiting. Four had X-ray evidence of tumor. All six cases showed

fields characteristic of pressure upon the chiasm. One was verified by operation, a pituitary cyst being evacuated. One has had two decompressions with relief of symptoms each time, and preservation of vision of one eye with loss of the other. Pituitary tumor was positively excluded in this case, but a tumor elsewhere is suspected. The other four have not come to operation, one having been relieved for the time being by pituitary feeding, and one by the removal of infected teeth and tonsils. One case is epileptic, and one, believed to have a neighborhood tumor, refuses operation.

The question of surgery in this type of case is a difficult one. It is probable that all four cases would have a better prospect for the future if operation were performed before permanent damage is done to important structures; but the symptoms have not been urgent enough to make them consent, nor to make their advisors insist.

CONCLUSIONS.

A critical study of the forty cases in this series suggests some practical conclusions.

The optic chiasm occupies a vulnerable position, with its bony environment and close proximity to the pituitary body, third ventricle, and the base of the brain with its meningeal covering. The peculiar distribution of visual fibers, in the chiasm and tracts immediately posterior to it, allows characteristic changes in the fields of vision. It seems that bitemporal limitation of the fields is more frequent than we have believed in the past. Pressure effects upon the chiasm, not due primarily or solely to pituitary disease, deserve attention. Other structures in this locality contribute to damage to vision.

In addition to the recognized value of perimetry in brain disease, more attention should be given to this aid in the early diagnosis of slighter disorders situated in the region of the chiasm and also remote therefrom but exerting secondary effects thru the intervention of hydrocephalus.

The use of large test objects alone fails to bring out the slighter contractions of the fields which are important in the early stages of diseases which damage the optic nerve. The picture of bitempo-

ral hemianopsia elicited with a 10 mm. white test object is of about the same value as the picture of a full-blown albuminuric retinitis in an advanced and hopeless nephritis. We should be much more concerned with the evidence of slighter alteration in the upper temporal quadrants; as we are to-day more interested in the earliest changes in the eye-grounds, manifesting slight damage to the retinal circulation in beginning cardiovascular and renal disorders. Smaller test objects reveal tendencies towards bitemporal hemianopsia. Cushing's and Walker's emphasis upon this point is well justified. I doubt very much if ophthalmologists will be disposed to abandon the use of colored test objects in favor of minute white objects, but several cases in this series show not only similar results with smaller white and larger colored discs, but even more information in regard to slight limitation of the temporal fields

obtained by using minute white discs. A limited experience in this respect suggests that Walker's method occasionally gives information not obtained by the use of colored test objects.

Enlargement of the blind spots, relative scotomata in the upper temporal fields, and blurred temporal peripheries in which a large white disc is not recognized as white, but merely as a moving object, have been of sufficiently frequent occurrence in this series to warrant special mention. The last of these was noted many years ago. Wilbrand⁹ referred to large zones of "deadened perception" in the temporal fields during the development and recovery from temporal hemianopsia. But little mention has been made of this phenomenon in recent years, tho it seems to be a fairly frequent occurrence, ranking with upper temporal slants for red and upper temporal scotomata, as a precursor of temporal hemianopsia.

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DETACHMENT OF THE RETINA IN A CASE OF PREGNANCY WITH NEPHRITIS.

REATTACHMENT AND RESTORATION OF VISION.

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This is the joint report of a case, from the Section on Ophthalmology and the Section on Obstetrics of the Mayo Clinic. Because of edema of the retina and threatened loss of vision, premature labor was induced. In both eyes, detachments of the retinas were found. These disappeared in about ten days and vision was gradually restored.

CASE.—Mrs. L. R. J., aged twenty-five years, primipara, of about seven and one-half months gestation, was referred to us by her family physician and entered the hospital August 22, 1922. At this time the systolic blood pressure was 168, the diastolic, 108, and the pulse, 74;

edema was graded 2. There was a large amount of albumin in the urine, a few hyalin casts, red blood cells and pus cells. The edema had been present for several months, and after the fifth month the albumin in the urine had disappeared under treatment; it had reappeared about

ten days before the patient's admittance to the hospital. Her general health previous to her pregnancy had been good, altho for a few years she had been somewhat overweight. Her tonsils had been removed in 1909 and a fibrous tonsillar tag removed in 1919. Examination of the eyes January 26, 1918 showed: right eye sphere $- .37$ \ominus cylinder $+ .75$ ax 90, vision 6/5; left eye sphere $- .37$ \ominus cylinder $- .75$ ax 90, vision 6/5. Fundi and visual fields were normal.

On admittance to the hospital the patient was given saline catharsis and placed on a nonprotein, salt free diet with fluids limited to 1000 c.c. For two days her blood pressure was lower, but rose again and remained high. August 22 the first symptom of ocular disorder appeared as a small dark spot in the upper nasal quadrant of the visual field of the right eye. Examination of the eyes showed the left pupil slightly larger than the right, pupillary reflexes normal, and visual fields normal to rough test. The fundi appeared to be normal with the exception of a barely noticeable contraction of the retinal arteries. August 25, a small area of retinal edema was noted in the lower temporal quadrant of the right eye, with a few small, pale, dart shaped areas scattered in the choroid on both the nasal and temporal sides. There were no such areas in the left eye. The discs and retinal vessels were normal. There were no hemorrhages or exudates in the retina. Marked contraction of the nasal field reduced vision to inability to count fingers in that direction.

August 26, massive retinal edema was present in the temporal half of the right eye, with what appeared to be early detachment along the inferior temporal vein far in the periphery. There were many more of the small pale areas in the choroid scattered around the fundus, the disc was normal, there were no hemorrhages or exudates, and the nasal field was more contracted. In the left eye the media were clear and the disc was normal. There were, however, several spots in the choroid, more numerous on the temporal side, similar to those preceding the detachment in the right eye. There were no marked vascular changes, hemorrhages, or exudates. The field was not contracted.

August 27, the retinal edema in the right eye was generalized, but most marked in the temporal half of the fundus. The choroidal spots disappeared as the edema of the retina increased. In the left eye, the lower temporal quadrant of the retina showed beginning edema. The choroidal spots were more numerous and were spreading to the nasal side. In both eyes the discs were still normal and there were no hemorrhages or exudates. On the fifth day, August 26, when the marked retinal edema had developed, the patient was given 60 cc. of castor oil following gastric lavage. This failed to induce labor and on August 27, because of threatened loss of vision, Dr. Mussey introduced a Number 3 Vorhees bag into the lower uterine segment. This initiated contractions and a boy weighing 4 pounds and 2 ounces was delivered fifteen hours later. The child was healthy and has gained steadily in weight.

August 28 there were lobulated detachments of the retina in the lower portion of the fundi in both eyes, and in the temporal quadrant of the right eye, with massive edema of the retina in the temporal quadrant of the left eye. The other areas of the retina in both eyes showed less edema and the pale choroidal spots were less numerous and noticeable. Vision of the right eye was reduced to inability to count fingers, and in the left eye to almost the same extent. The right field was greatly contracted in the superior and nasal sides; the left field was good for large objects.

August 29, the retinal detachments were less elevated. The vision began to improve and the visual fields to widen. The detachment in the right eye had reached to within 1.5 disc diameter of the disc margin, while in the left eye it was within 4 disc diameters of the margin.

August 30, there had been a definite subsidence of the edema. The upper part of both retinas was clearer, so that the choroidal spots could again be seen. The detachment in the right eye had receded more than in the left.

September 4, there had been a steady subsidence of the edema. The retina had become reattached in the left eye and also in the right eye except far in the periphery of the lower quadrant. Con-

siderable edema of the retina was still present, but the vision and visual fields showed great improvement. The patient could count fingers readily with the left eye, but with great difficulty with the right eye. Pigment changes were appearing in the regions that had before been occupied by the pale spots in the choroid, which seemed to indicate that choroidal degeneration was taking place and that the pigment change was the direct result of that degeneration.

September 5, the retinas had become reattached altho there was still slight edema. In the left eye there was a difference of level of less than one diopter in the various portions of the fundus, while in the right there was still a difference of 4 to 5 diopters. The visual fields were widening greatly.

September 9, vision in the right eye was 20/80; in the left, 20/40. The edema had practically disappeared so that all of both fundi could be seen with

the same lens, with the exception of the lower temporal quadrant of the right eye.

September 17, the edema of the retina had entirely disappeared. Scattered around the fundus were pigmentary areas corresponding to the size and location of the pale spots that preceded the detachment, and were more numerous in the visible portions of the choroid when the detachment was greatest. They were present, moreover, in areas where the retina had not been detached, but showed only massive edema. The macular areas were unchanged.

Eight hours after delivery, the systolic blood pressure was 144 and the diastolic 98. Following this, with the continued dietary regime, catharsis and careful sweating, the patient's general condition gradually improved until she was apparently well September 22, with a systolic blood pressure of 120, diastolic of 84, and a very faint trace of albumin in the urine. October 30, vision with correction was 20/33 in each eye.

TABLE SHOWING DAILY CONDITIONS

Date, 1922	Blood pressure		Pulse	Urine			Phenolsulphone-phthalein, per cent	Blood urea, mg.	General edema	Examination of fundus
	Systolic	Diastolic		Specific gravity	Albumin	Reaction				
8-22	168	108	64	1.017	3	Acid		38	2	Negative.
8-23	144	104	64	1.019	3	Acid			2	Negative.
8-24	124	88	74							
8-25	170	108	74	1.033	4	Acid				Slight edema of right eye.
8-26	174	104	74	1.020	3	Acid	50	38	2	Massive edema of right eye; spots on left eye.
8-27	182	108	66				50		2	Massive edema of both eyes.
8-28	144	98	90						1	Lobulated detachment of both eyes; vision, counts fingers.
8-29	152	100	88	1.015	3					Edema receding.
8-30	138	98	80		2	Alkaline				Detachment receding.
8-31	136	94	80	1.011	2	Acid				
9-1	112	96	88	1.012	2	Neutral				Detachment receding.
9-2	126	86	74							
9-4	130	88	74							
9-5	128	88	80	1.016	2					Retina reattached.
9-6	130	88	72							
9-8	120	88	92							
9-10	116	86	86					30		Slight edema of right eye; edema gone from left eye.
9-22	120	84	78	1.019	1	Alkaline	50	32		Edema gone; vision in both eyes 20/33.

QUININ AMBLYOPIA.

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This is the report of a case in which the quinin was taken after prolonged alcoholism. The eyegrounds were watched and progressive changes, exudates and contraction of the vessels followed to the ultimate condition.

CASE.—J. C. White, 70 years, male, mill hand.

History.—Distant vision good, can make out small print, only parts of the object looked at can be seen. Has never been sick with the exception of an occasional attack of acute indigestion after a drinking bout. Denies venereal dis-

tents. He is sure that the bottle was half full of two-grain quinin pills. It originally contained one hundred. Therefore the dose taken was approximate one hundred grains of quinin sulphat.

At ten o'clock that night, he went to bed and slept heavily thirteen hours. On awakening, his vision was so reduced that

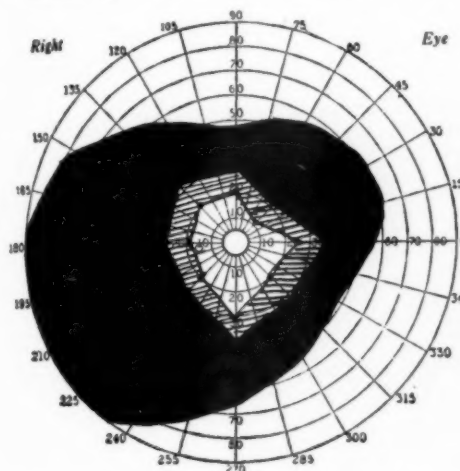


Fig. 1. Right field of vision taken with a 5 mm. white object, at 10½ inches and standardized illumination. Feb. 15, 1920.

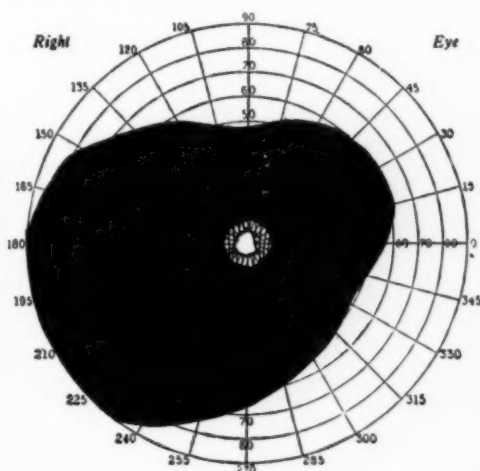


Fig. 2. Right field of vision taken with a 5 mm. red object at 10½ inches, standardized illumination. (Central area only for green.) Feb. 15, 1920.

ease. Has never used tobacco or coffee, and takes but two cups of weak tea a day. Has always been a heavy user of beer; and goes on periodical whiskey debauches, lasting over periods of from a few days to a number of weeks. Has been accustomed to take quinin all his life, in three to six grain doses, not more than three or four times a day. (He evidently has no idiosyncrasy for the drug.)

Present Trouble.—Dec. 6th, 1919, the patient began drinking, very heavily, whiskey of good quality; and continued steadily until Dec. 21st. During this period he was never free from its effects. While intoxicated he told his wife that he would stop drinking and take a brace of quinin. He went to a cabinet, took down a bottle, and with the aid of water, swallowed its entire con-

he saw the sunlit windows only as a dim glow. He had no nausea, vomiting, diarrhea, ringing in the ears, or deafness. His head ached slightly, but he in no way other than the blindness felt the effects of the quinin. He is sure no pills appeared in the stool twenty hours later—on his first effort at defecation.

His vision gradually improved during the next four days, when he could make out, as shadowy forms, flower pots standing on the window sill ten feet away. In decreased illumination the effect was utter darkness. The family physician was called as soon as the condition of the vision was discovered. He administered cathartics and had the patient sweated. There had been no other treatment up to time of examination.

Examination, Feb. 14th, 1920.—The patient presents a rather energetic type for a man of his age and does not appear feeble. He is of medium height and rather slim build. He weighs one hundred and thirty-five pounds, tho he has lost about ten pounds since the onset of the present trouble. There is a moderate general arteriosclerosis. Blood pressure is 150/85. Urinalysis is negative.

The external appearance of the eyes presents no change of note, except that

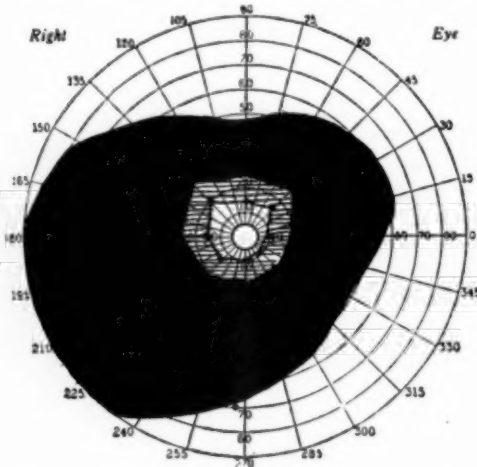


Fig. 3. Right field of vision, outer boundary taken with a 5mm. white object, at 10½ inches, standardized illumination. (Central area only for red and green). March 13, 1920.

both pupils are slightly dilated, are somewhat oval in the vertical meridian, and react to light, tho not as promptly as would be expected even in a man of his age. His vision in both eyes is six-ninths with correcting glass of a plus 5 sphere.

The fundi of both eyes present the same picture. The nerveheads show a very slight uniform pallor over their entire area. The arteries may be slightly narrowed. The veins show an increase in caliber, which may be entirely relative tho they seem darker in color.

A small artery coming towards the disc nasally and above in both eyes, shows a peculiar rectangular plaque as if there had been a stiffened spot of sclerosis on the vessel before it decreased in caliber, which was left with overhanging edges and rather sharp angles. There are also small, nearly round spots of a

soft creamy color, some with sharp, some with blurred edges scattered thru the entire fundus. (See Fig. 4).

The sharp edged ones suggest an old choroiditis, but there is no pigment and they are not as light as would be expected. The blurry edged ones suggest new formed exudate but are less lustrous. The macula reflex cannot be made out and there is no suggestion of a "cherry-red spot."

The visual fields of both eyes show the same picture. There is a concentric contraction for form which shows a relative area approximately between the twentieth and thirtieth degrees. The field of good vision extends from the point of fixation to the twentieth degree. There is slightly more encroachment on the nasal side. The field for red is reduced to a nearly concentric area delimited by the five degree line, but there is a narrow relative area beyond this reaching to the tenth degree. There is only central vision for green.

Tangent screen (Duane's) at sixty inches shows there is only an enlargement of the field of five centimeters over the field when taken at thirty inches. Therefore it is very suggestive of the tubular type of field as sometime seen in hysteria. During the succeeding weeks there was a gradual change until the following picture presented one month later.

Subjectively.—The patient says that his vision does not seem to be worse. He feels well and his hearing seems as good as ever. He complains, however, that his hands and feet are always cold, a thing which never pertained before his present trouble.

There are no changes noted from external examination of the eye. The fields of vision have undergone no noteworthy change and central vision is the same as when first examined. The nervehead still shows only slight pallor. The lamina cribrosa has at no time been visible. Tho the edges of the disc showed sharp definition at the time of the first examination, they have gradually taken on a hazy and fuzzy appearance, but the border is still definable. A soft pinkish veil seems to cover the entire fundus uniformly. It softens the outline of the structures without obscuring them suf-

ficiently to seriously interfere with a study of their detail. The macula reflex cannot be made out, nor can any characteristic pathologic change be noted in that area. Fig. 5.

The small disciform spots, previously seen thruout the fundus, have entirely faded from some areas and new ones

The arteries, however, have gradually taken on the narrowed appearance and in places become thread like, then disappear. The peculiar feature of the case is the plaque like spots of exudate which appear along the arteries. Those which were present at the first examination have lost their rectangular form and well

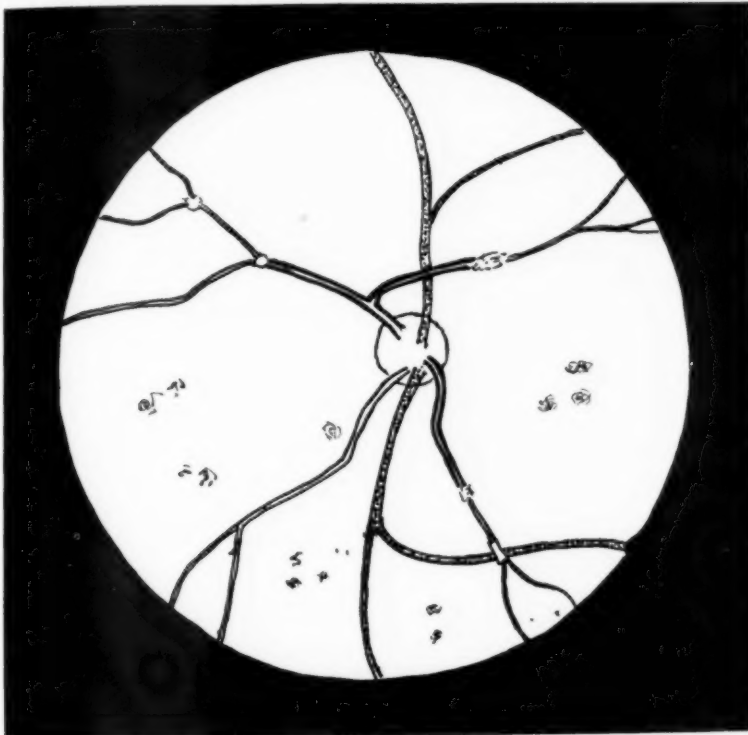


Fig. 4. Condition of fundus when first seen showing changes in vessels and groups of retinal exudates.

seem to have developed in other places. The older ones show more sharply defined edges and in fading gradually pale over their entire surface, becoming shadowy and blend with the background of the choroid. The newer spots begin as soft fluffy blotches and are slightly lustrous and gradually take on the disc like form. The cycle seems to affect a group or small areas of them, rather than that individual ones appear and fade. The veins do not show marked changes tho they still seem congested and as they approach the discs narrow slightly. They show none of the peculiar plaque like exudates seen on the arteries.

defined borders, and have become a dusty buff color. They are blurry in outline, more rounded in shape, and some of them have become almost the color of the underlying choroid. This makes them nearly invisible except where they actually overlap the wall of a vessel. New spots are developing. They are of a light cream or white color, with quite a decided luster, but not as brilliant as a spot of fresh exudate usually is. Their outline is blurry, but they seem to be of a rectangular form. Later in the development of these spots they assume sharp edges and present a pallor which strongly suggests fibrous tissue or even

calcareous deposits. There can be no structural change, however, as they finally fade and disappear. These plaques seem to overlay the vessel and extend about it like a cuff on an arm. But this does not occur in every instance. In fact, in some instances they seem to be underneath or on the side so that the

for a spot of exudate to be on a narrowed vessel, and all vessels do not narrow distally to a spot. This may be due to the stage in the development of the exudate. The plaques and the disc like spots also appear on the nervehead, where they seem more yellowish against the whiter nerve fibers. They were not

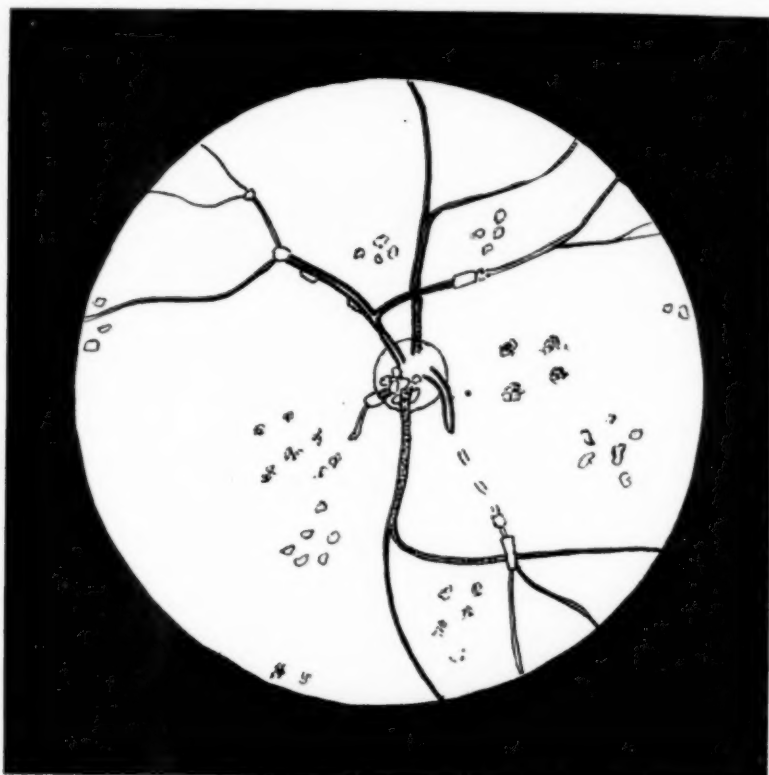


Fig. 5. Intermediate appearance, showing contraction and interruption of arteries, and new spots visible in fundus.

edges only appear. This picture possibly suggests that the process is in a small segment of the perivascular lymph space. The plaques vary somewhat in size, being in length from half to twice the diameter of the artery where they are located.

An interesting phenomenon associated with the presence of the plaques is noted. Where one of them appears the artery is narrowed abruptly from the periphery, as if strangulation had occurred by contraction of the exudate. From this point of narrowing the vessel tapers gradually, becoming thread like and disappearing. It is not invariably the rule

present here at the first examination but developed gradually. Fig 6.

SPECIAL POINTS OF INTEREST.—The salt used was quinin sulphat. The vehicle in which it was taken was indirectly alcohol, as the patient had imbibed large quantities of whiskey immediately before taking the drug. The method of administration was pill form, by mouth. The total amount of the drug retained in the system must have been large, as there were no pills found in the bowel movements, and there was no vomiting. The salt is twelve times more soluble in alcohol than in water, and the presence

of whiskey in the patient's stomach probably accounts for the rapid and complete absorption.

The absence of other symptoms is very unusual.

The individual idiosyncrasy of the patient does not seem to be a predisposing

factor. That an ounce and upward has been taken and not proved fatal may seem an excuse for carelessness. It is probable that there are many more cases of poisoning than we hear of, and anyone fully understanding the dangers will never prescribe over forty-five grains a

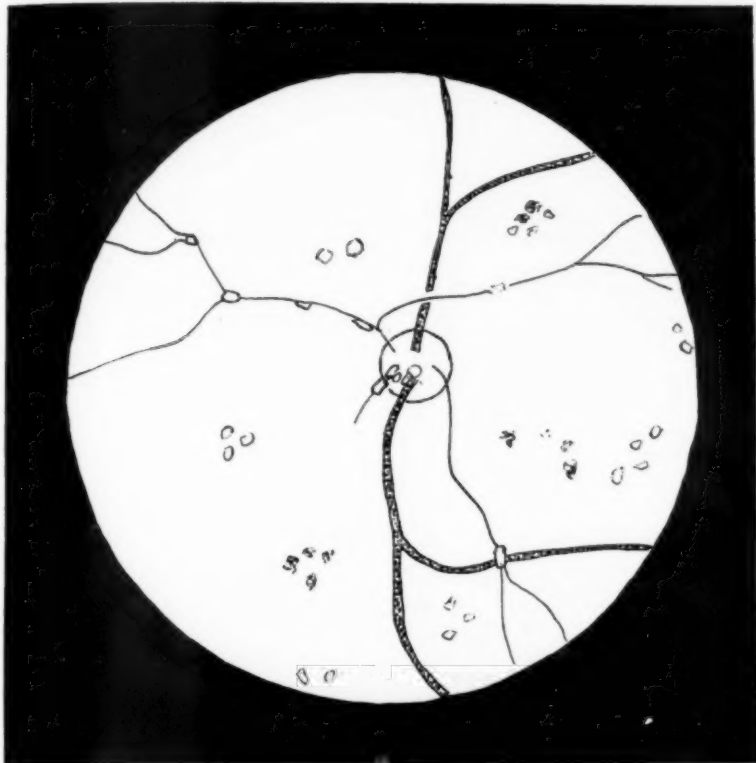


Fig. 6. Final appearance of fundus showing great contraction of arteries and grouping of spots.

factor here. He had always been in the habit of taking three to six grain doses to "break up colds," etc., and had never noticed disagreeable symptoms from quinin. The age and sex, which is more directly a question of weight, does not become a factor here as the size of the dose and other circumstances account for the results.

day. It is realized that the plaques and peculiar spots of exudate may in no way have a direct or even indirect relation to the quinin poisoning, yet the rapid absorption of such a large quantity of the drug may have made visible pathologic changes which may account for those vascular changes typical of this intoxication.

IMMUNE REACTIONS OF THE LENS.

LUDVIG HEKTOEN, M.D.

CHICAGO, ILL.

This paper gives in abstract results of investigations made in the John McCormick Institute for Infectious Diseases, Chicago. It indicates the general nature of organ specificity and absence of species specificity in the precipitin reactions of the crystalline lens. Read before the Chicago Ophthalmological Society, Oct. 16, 1922. (See p. 319.)

I wish to make an informal report on further work on immune reactions of the lens. In my former report¹⁻² it was pointed out that the protein of the lens¹ is organ-specific and not species-specific. I have studied the action of antilens rabbit serum, produced by the injection of rabbits with beef, swine, sheep, horse, and human lens on a variety of lenses including besides those mentioned, dog, guinea pig, rabbit, rat, chicken, monkey, and certain fish lenses, as well as certain other tissues. Antiserum has been produced also by injecting solution of fish lens (Menhaden), and its actions studied. The sum and substance of the observations is that in the precipitin test the lens is organ-specific, and not species-specific; it is the one tissue of the eye that as a rule does not contain any species-specific elements, so far as indicated by the precipitin reaction. The fetal human lens may contain species-specific elements. By that I mean, elements that will react with antiserum produced by the injection of human serum in the rabbits, and occasionally a cataractous lens may contain a little albumin.

By relatively simple means the two globulins of the lens, alpha crystallin and beta crystallin, described by Mörner, may be isolated, and by injections of the

crystallins of beef lens, which is easily obtainable, Dr. K. Schulhof and I find that these two elements, alpha and beta crystallin, are immunologically distinct, so far as the precipitin reaction goes; that is to say, serum against alpha crystallin reacts only with the alpha crystallin, and serum against beta crystallin reacts only with beta crystallin. By tests of lenses from various species with anti-crystallin serums, we find that the organ-specificity of the lens is maintained, which fact means that the lens in general contains alpha and beta crystallins. As indicated in table 1, the mixing of alpha precipitin serum with a solution of alpha crystallin removes the alpha but not the beta precipitin, while mixing with beta solution has no effect; with beta precipitin serum, however, the effect is reversed. This result shows that alpha and beta crystallins are distinct substances peculiar to the lens, which no doubt owes to them its organ-specificity.

I have studied also the precipitin reactions of the cataractous human lens. Dr. E. K. Findlay was kind enough to arrange so that I could obtain cataractous lenses from the Illinois Charitable Eye and Ear Infirmary. Altogether about fifty lenses with senile cataract

TABLE 1. CRYSTALLIN PRECIPITINS (BEEF)

	Alpha Precipitin Serum			Beta Precipitin Serum		
	Original	Treated with Alpha Crystallin	Treated with Beta Crystallin	Original	Treated with Alpha Crystallin	Treated with Beta Crystallin
Lens (Beef).....	++++	0	+++	++++	++++	0
Alpha Crystallin (Beef)	++	0	++	0	0	0
Beta Crystallin (Beef)	0	0	0	++	++	0
Lens (Human)...	++	0	++	++	++	0

have been studied. The cataractous lens reacts practically almost as well with antilens serum as the normal lens. Immunizing rabbits with solutions of cataractous lens, one can obtain as potent antilens serum as by injecting solutions of normal lens. Rabbits have been immunized each with the solution of one particular lens, and I call such serum univalent as distinguished from serums produced by injecting solutions of a mixture of lenses which I call multivalent, but it has not proved possible to distinguish in any way between the lens substance from different cases of senile cataract by means of precipitin reactions with univalent antisera.

Dr. Schulhof and I also studied the reactions of the cataractous lens with the anticrystallin serums I spoke about, and we find that the cataractous lens apparently contains less alpha crystallin than beta crystallin, a result that corresponds with the results already obtained from chemical studies of the cataractous lens.

The Figures (approximate only) in table 2 give highest dilutions of lens solutions giving precipitate with antisera by contact method after one hour at room temperature. Similar results were obtained with 14 other cataractous lenses.

We have made other experiments of more or less interest. We tried to produce lens precipitins in the normal rabbit by injecting solution of rabbit lens, but so far without positive results. We asked Dr. Davidson to remove the lens, thinking possibly the presence of the lens in some way might inhibit the formation of antibodies to the lens; but in lensless rabbits the injection of rabbit lens was also without any apparent effect. We then used rabbits that had previously been injected with other lenses, human

or beef lens, rabbits that had developed a marked high antilens precipitin curve and were now in the declining phase. Injecting rabbits like that with solutions of rabbit lens, we were able to call forth a renewed production of precipitin for rabbit lens, as well as for all the other lenses that we were testing. It is interesting to note that there is something in the heterologous lens which starts the machinery of precipitin production, whereas the lens of the rabbit itself does not, so far as our experiments go, appear to have that power in the normal rabbit. In rabbits previously sensitized with foreign lens, however, the homologous lens may call forth precipitin production.

The precipitin test is a highly reliable test, easily read; the result is clear because it depends on the formation, or not, of a precipitate at the line of junction between the antiserum, the serum of the animal injected with lens solution, and the superimposed lens solution. The titer of the antiserum is determined by the highest dilution of the lens solution with which it forms a precipitate. If the dilution of lens of 1 to 10,000 is the highest that gives precipitate when it comes in contact with an antiserum, the titer of the serum is 10,000.

Since my former report, a Japanese ophthalmologist, Professor R. Kodama³, has made a study in our laboratory of the anaphylactic reactions of eye tissues, using especially the eyes of the beef. The difficulty with the anaphylactic reaction in work of this sort is to estimate correctly the minor manifestations of anaphylaxis. There is no difficulty in understanding the major reactions, the typical anaphylactic shock; but when we come to measure anaphylactic reaction by the fall in the temperature and the length of time it takes for the temperature to

TABLE 2. PRECIPITINS FOR HUMAN LENS, CATARACTOUS AND NORMAL

	Anticataract Serum Multivalent	Anticataract Serum Univalent	Anticataract Serum Univalent	Antiserum for Normal Human Lens
Beef Lens	8000	1600	64000	40000
Alpha Crystallin (Beef).....	800	400	1600	800
Beta Crystallin (Beef).....	8000	2000	64000	8000
Human Lens	8000	8000	32000	16000
Cataractous Lens	8000	8000	32000	16000
Cataractous Lens	4000	8000	16000	16000
Cataractous Lens	8000	16000	128000	16000

return to normal, difficulty arises because the guinea pig, the animal commonly used for anaphylactic work, is very sensitive to all sorts of manipulations. Even the injection of normal salt solution into peritoneal cavity may reduce the temperature of a guinea pig, and Kodama found that extracts of all eye tissues are primarily toxic for the guinea pig. In degree of toxicity the order is as follows: lens, uveal pigment, retina, uveal tissue, cornea and vitreous.

With due regard to the primary toxic effect of extracts of eye tissues, Kodama determined that so far as the anaphylactic reactions are concerned, there is no absolute organ-specificity of the eye tissues. He points out that as the eye tissues are embryologically and functionally related, this is hardly surprising. He found, however, marked differences in the range of the anaphylactic reaction of eye tissues. The lens was most limited, being nearly organ-specific but not quite. It is, however, eye-specific by the anaphylactic reaction. If a guinea pig is sensitized by injection of lens, and then given an injection of beef serum, or vice versa, there is no reaction—the lens does not sensitize the guinea pig for beef serum and beef serum does not sensitize for lens—while the other tissues of the eye sensitize the guinea pig for lens injection, and lens injection sensitizes the guinea pig for some of other tissues of the eye, as shown in table 3.

After the lens come the uvea, then the optic nerve, the retina, the cornea, and the vitreous, the cornea and vitreous being the least specific of any of the eye tissues, while the uvea, optic

nerve, retina, cornea, and vitreous all sensitize the guinea pig for beef serum. The lens is the only strictly eye-specific tissues, so far as the anaphylactic reaction goes. One would expect this from what I have said with regards to the specificity of the precipitin reactions of the lens.

On the basis of these results, Kodama emphasizes that in sympathetic ophthalmia we should not assign an exclusive role to the uveal pigment, but recognize the possibility that other elements may play a part also.

I have made a few observations on the precipitin reaction of uveal pigment and of cornea with results as follows: If we inject a rabbit with extract of beef cornea, there develops in the rabbit precipitin for extracts of beef cornea, for beef serum, for the vitreous and for extract of uvea, but not for lens; showing that the cornea is species-specific. Uveal pigment seems to give analogous results, the serum of rabbits injected with extract of bovine uveal pigment reacting in the experiments so far not only with the pigment but also with beef serum, with extracts of cornea, and with vitreous. In other words, while there may be organ-specific elements in the uvea, there are also present species-specific elements, hence the injection of a person with bovine uveal pigment may sensitize him to beef proteins in general.

The study of the immunology of eye tissues is an extremely interesting field. Obviously in order to get a correct and full conception of the immunologic reactions of eye tissues, it is necessary to use all available reactions—complement fixation, the precipitin

TABLE 3. THE GENERAL ANAPHYLACTIC EFFECTS OF EYE TISSUES (BEEF)

Sensitizing Injections	Intoxicating Injections						
	Cornea	Lens	Vitreous Body	Retina	Uvea	Opticus	Serum
Cornea	+++	0	++	+++	0	++	+++
Lens	++	+++	+++	+++	0	0	0
Vitreous	+++	+++	++++	+++	+++	0	+
Retina	+++	++	+++	+++	0	+++	++
Uvea	++	++	++++	0	+++	+++	+++
Opticus	++	0	+++	+++	++	+++	+++
Serum (Beef) .	+	0	+++	+	0	+++	+++

0 = no reaction; + = mild reaction; ++ = medium strong reaction; +++ = severe reaction

test, anaphylactic reactions, cutaneous reactions. At present the clinical bearings of this kind of work seem to lie in the direction indicated by Elschmig, Woods⁴, Verhoeff⁵ and others. The possibility that certain proteins of the

human eye, by virtue of being quite different from the proteins of the blood, under certain conditions give rise to general reactions of the nature of self sensitization of the body, may be of great significance in ophthalmology.

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- The specific precipitin reaction of the normal and cataractous lens. *Jour. Infect. Dis.*, 1922, 31, p. 72.
3. Kodama, R. Anaphylaxis produced by eye tissues. *Jour. Infect. Dis.*, 1922, 30, p. 418.
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SOLARIZATION IN TRACHOMA.

JOHN WESLEY WRIGHT, M.D.

COLUMBUS, OHIO.

The method of treating trachoma by exposure to the concentrated rays of the sun, is here recommended and described. Such rays are more potent than those of the electric light, which may, however, be substituted when solar rays are not obtainable. The applications include solar heat, which must not be applied in excess. They are especially valuable in the treatment of corneal ulcers that appear in this disease.

Trachoma is a condition rather than a disease, the effects of an inflammatory condition of the conjunctiva, which is evidenced in both contagious and noncontagious inflammations of this membrane. Altho ordinarily a communicable affection, no germ has been discovered that points definitely to its origin.

Investigations by eminent authorities render the specificity of the corpuscles, claimed by Greeff and others for trachoma, doubtful. These corpuscles have been found in many other inflammatory conditions of the conjunctiva, such as blennorrhoea neonatorum, spring catarrhal conjunctivitis, and other forms, independent of the etiology of the disease. For the reason that evidently no morbid agent of trachoma has been discovered that would help to indicate its treatment, a discussion of the very different and complex views of pathologists does not bring valuable results.

It is certainly to be regretted that there is so much uncertainty as to the origin and nature of the changes found in trachoma. Something positive as to its cause would doubtless aid in its treatment, if not in its prevention. The distinction between follicular conjunctivitis and trachoma granules general-

ly, if any, having never been histologically determined, we are compelled to apply our treatment empirically.

The prevalence of trachoma has increased to such an alarming extent in certain sections of this country, that all available means possible should be adopted to stay its progress. Its origin is doubtless in densely populated and unsanitary communities, nevertheless thru the many and diverse means of communication it has entered into those most hygienic.

I am aware that it is generally regarded that the diagnosis of trachoma presents little difficulty, but from my experience I am persuaded to the contrary. Moreover, the chronic forms of conjunctivitis, the vernal, autumnal and the like, often result in similar complications to those of trachoma proper.

It is conceded by those who have made searching studies of trachoma, that its virus is more sensitive to external influences than the germs of other conjunctival affections. It stands to reason that communities of highly developed hygiene are not so liable to outbreaks of trachoma. It has been practically demonstrated that cleanliness, fresh air, regular habits and good diet are efficacious preventives of this

affection, and in its treatment most potent factors.

Trachoma is usually so insidious in its progress, that for a long time the patient may not be aware of any affection of the eyes until some complication, as a corneal ulcer, develops. Then, in order to promote the treatment of the ulcer, the trachoma must receive attention. While our treatment is directed toward the preservation of the cornea, the conjunctiva must not be neglected, for when its functions are destroyed, the cornea must inevitably suffer.

It must be admitted that severe treatment, as burning the conjunctiva with strong caustics, and lacerating it with rasps, sand paper, roller forceps, and the radical operation of the removal of the palpebral conjunctiva, the tarsus, or both, is not in favor as formerly. It stands to reason that the integrity of the conjunctiva must be maintained in order that the cornea may be left clear. When the cornea is lost, sight is lost.

There is little doubt, if trachoma were discovered and given proper treatment in its incipency, there would be a very noticeable decrease in this affection. What may be considered but a slight conjunctivitis should not be neglected. Many of these cases considered as infectious probably are not, but in the contingency the most effective treatment possible should be administered in order to prevent it from becoming so.

Very few cases of trachoma come to the oculist in their incipency. He is not as usual consulted until there is a complication, generally a corneal ulcer accompanied by pain and more or less inflammatory action. The location and character of the ulcer and the extent of the conjunctival inflammation modify the treatment very much.

Acting upon the principle that heat, light and dryness are among the most potent bactericides, I have installed them as therapeutic agents in the treatment of this affection, with decidedly encouraging results. Aside from the general treatment and the usual local applications to the ulcer and conjunctiva, I now apply concentrated light from the sun, when it is possible to do so; when not, the concentrated light

from the electric bulb. I much prefer the former, but have had seemingly excellent results from the latter. Inasmuch as the electric rays were substituted when it was impossible to have those of the sun, and not exclusively in any case, their real value cannot be determined. Of the solar rays I am reasonably assured.

Concentrated solar rays are decidedly more potent than those of artificial light, especially where it is necessary to apply them to an ulcer, but it is impossible to have sunshine at all visits of our patients; then we apply those from the electric light.

Great care should be exercised in the employment of solar rays, that too much heat may not be applied. Its application to the back of the hand will indicate how long it will be safe to apply them to one spot, as the corneal ulcer. For the concentration of the rays I use a 10 or 12 D. convex lens. In the trachomatous lid every part of the granulated conjunctiva should be passed over slowly, not allowing them for any time to be confined to one spot. Particularly must the retrotarsal fold be subjected to the rays, but not the conjunctiva of the ball, as it does not become granulated.

I can offer no theory as to the action of solar heat on trachoma; whether it is bactericidal, or if the stimulation of the conjunctival glands causes absorption of the granules; both probably are factors. But I know the granules disappear with very little reaction and without cicatrization of the conjunctiva.

The application of the rays twice a week is usually sufficient. Rarely more than three applications have been found necessary to clear up an ulcer, and a half dozen to the granules, however, it is occasionally necessary to make a few additional applications, especially to the ulcer. Ulcers in the course of trachoma are usually accompanied with gray ragged edges. As soon as the ulcer presents a clear cut depression with a small leash of blood-vessels approaching it from the conjunctival margin, the rays may be discontinued; and followed by occasional instillations of boric acid solution.

A SELF REGISTERING CAMPIMETER AND SCOTOMETER.

JESSE W. DOWNEY, M.D.

BALTIMORE, MD.

This is the description of an instrument, which may be used at several different distances and at different positions. It is based on the circular method of moving the test object.

The instrument, of which photographs are here shown, was constructed some years ago, and has been found practical. I believe that it presents some features which are unique, if not original, and that it is worthy of

of the self recording device. By an arrangement of levers, similar to an instrument in use for years to enlarge line drawings, one point may be made to move in a certain proportion to another point*. This principle has been

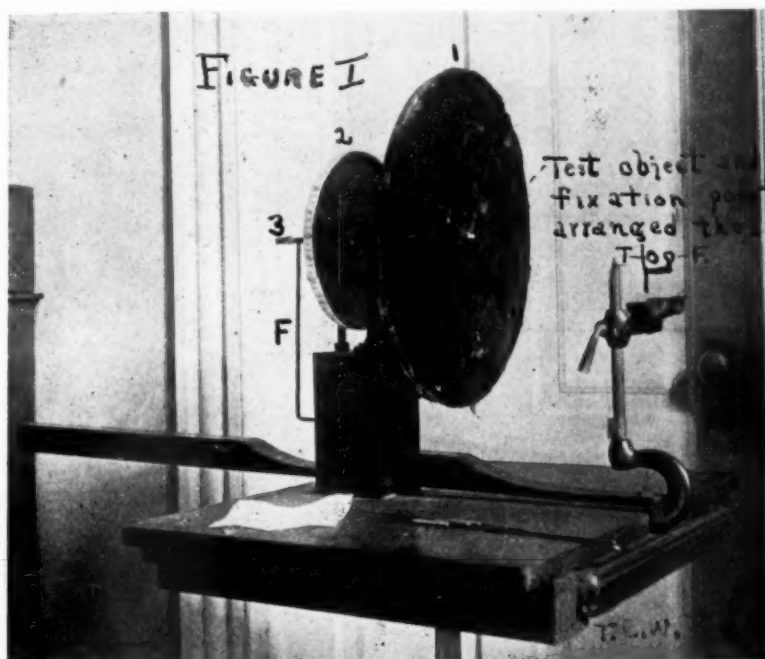


Fig. 1. Downey's registering campimeter in primary position. 1. Field of dull black velvet. 2. Wheel graduated to indicate meridians. F. Spring carrying registering point.

presentation. The possibilities and value of the instrument may be best described by reference to the photographs and diagrams.

Figure 1 is a photograph of the campimeter in the primary position. The campimeter (1) is 35 cm. in diameter; is covered with dull black velvet and is held on an arc (90°) of a circle.

A glance at Figure 2 will make a lengthy description unnecessary, as it will be immediately seen how the campimeter is mounted, and how it revolves around the central axis (G).

Figure 2 also shows the mechanism

utilized as follows: B is a set screw, carrying the test object, which is moved by a handle D, in a slot that extends thru and from the center to the periphery of the campimeter. A is a pin mounted in an arm which moves as B is moved, but only one third the distance. At the center, A is exactly over B.

The second part of the recording

*MARKS has made use of this same principle in his self recording scotometer recently described at the Section on Ophthalmology, Australian Medical Congress.

mechanism is also shown in Figure 2. F is a spring arm fitting loosely thru the axle G, and carrying the chart holder E. The chart holder E remains in one position at all times, except that it can be moved forward in the direction of the arrows by pressure on F.

Again referring to Figure 1, it will be readily understood that the examiner, with his hand behind the campimeter, may move the test object carrier, with the handle (D, Fig. 2) to any position

fixation point arrangement is shown in the insert drawing in Fig. 1. My instrument is constructed to be used at 17 cm. in the primary position. This distance was chosen to correspond to the hand campimeter of Peter; such a campimeter, or scotometer, only has a limited usefulness.

Bjerrum's method of working out a field, or a scotoma, with a small test object at a relatively great distance, is often of much more service.

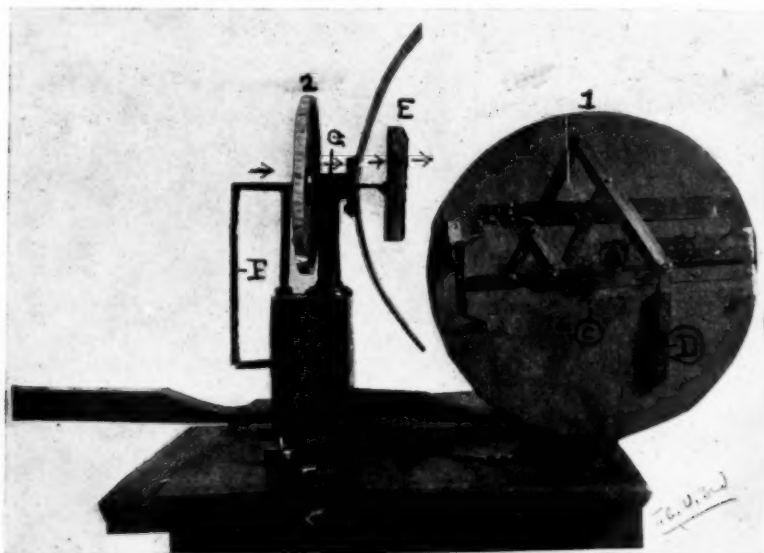


Fig. 2. Registering perimeter. 1. Showing back of campimeter disc which carries a mechanism controlling motion of the registering point to correspond to movement of the test object.

from the center to the periphery, and by revolving the campimeter, place it on any or all meridians. When he wishes to record a finding he pushes upon the spring arm (F), and the chart is moved forward and punctured by the pin A. The chart holder springs back to its original position when pressure is removed from F.

The slot, on the face of the campimeter, in which the test object moves, is very narrow; and by using a covering of black velvet, the edges of the material falling together, makes its presence almost unnoticeable to the patient. The test objects are round headed pins, of various sizes and colors, which may be quickly placed or removed in the set screw carrier. The

Figure 3 shows the campimeter in position to be used at 57 cm., this distance being chosen as each centimeter on the campimeter is, for practical purposes, equal to 1° . In this position the instrument is most useful, in mapping out and charting small central and paracentral scotomata.

The photograph (Fig. 3) shows how the table carrying the instrument may be lengthened without disturbing the patient. It will be readily understood that in markedly contracted fields the flexibility of this instrument offers a most reliable way of proving the size of the field, and an ideal way of demonstrating the "tubular field" of hysterical patients.

In figure 3 it will also be noted that

the arm H-J is pivoted at J, so that the whole campimeter can be swung to one side or the other. For example, the whole campimeter may be swung 15° to the temporal side of the eye being examined; the central fixation point of the campimeter will then lie within the "blind spot of Mariotte" if the eye is kept in a horizontal plane, and the latter is accomplished by swinging the fixation rod K-L into position. We then have a very ac-

tion. After much thought it has seemed that a chart similar to the one used by Col. Elliot with his scotometer is best adapted; especially as my instrument, so far as I know, is the only campimeter in which *the circular method of Priestley Smith, as well as the radial method, can be made self recording.*

In charting scotomata and the "blind spot," I have used plain paper and estimated their size in degrees, by their measurement in centimeters.

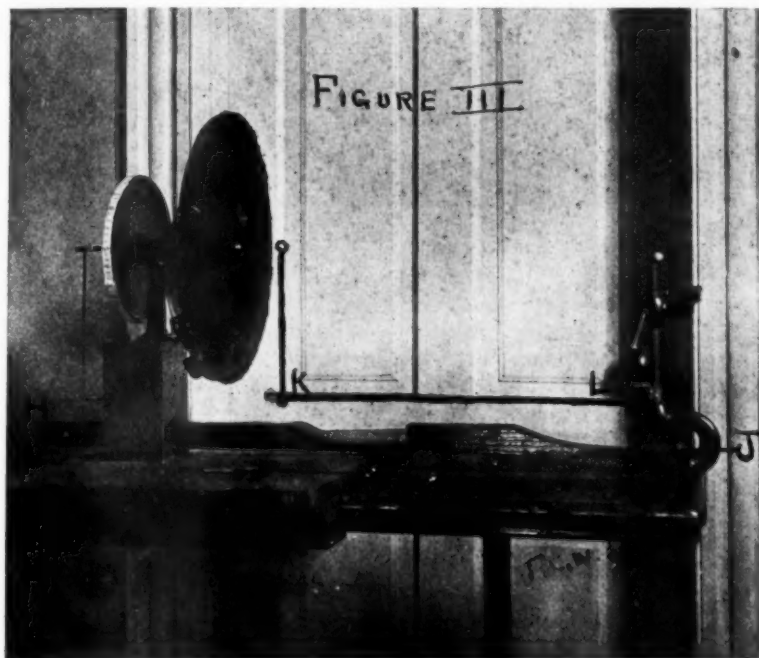


Fig. 3. Showing manner in which the distance of the campimeter from the eye may be extended when the field is greatly contracted or the central part is to be more accurately tested. J is a pivot about which the arm H may be swung 15° either way, to take parts of the field more removed from the fixation point.

curate way of measuring and charting the "blind spot." Again, referring to Fig. 2, it will be noted that the arm and recording pin can be swung out of the way; and with a recording pin in the back of the test object carrier B, the scotoma or "blind spot" can be charted, its actual size for the distance at which the examination is being made.

Perhaps the most complicated feature of the instrument is the question of charts, a different one being required for each method of examina-

The instrument being set at 57 cm. from the eye and the pin back of the test object (B) being used to record, each centimeter approximately equals 1° .

Reference to Figures 2 or 3 will show that the face of the campimeter has been marked off in degrees by faint indentations in the velvet. With hand test objects and an assistant to chart, a field may be very quickly and accurately examined without a single movement of the instrument.

The model here shown is very

rough and obviously the work of the author's own hands for experimental purposes. It undoubtedly should be larger and many parts could be mechanically improved. Several years

use of this particular instrument has proven it to be useful, so that it seems justifiable to describe it to the profession, before attempting to have it constructed in an improved form.

THE ETIOLOGY OF UVEITIS.

BURTON CHANCE, M.D.

PHILADELPHIA.

This is a general review of the recent changes in our conception of uveitis and its causation. Read before the Section on Eye, Ear, Nose and Throat Diseases of the Medical Society of the State of Pennsylvania, October, 1922.

The term "Uveitis" will be used, in this discussion, to imply an inflammatory process in any part of the uveal tract. While it is convenient to describe and classify iritis, cyclitis and choroiditis as separate diseases, in clinical practice, one must remember that each is a form of uveitis, and that there is likely to be accompanying it inflammation of other portions of the tract; it is, in effect, an endophthalmitis. When inflammation seriously attacks one part of the uveal tract, other parts do not entirely escape, altho it does sometimes remain confined to the part first attacked. The particular affection with which this discussion is intended to deal commences, clinically, most usually in the iris and less commonly in the ciliary body, insidiously with little or no signs of inflammation, and continues indefinitely, even for months or years; or, in other cases, with severe signs of inflammation appearing late in the course. By some it is spoken of as iridocyclitis, and by others as "chronic uveitis."

The affection of the individual components of the uveal tract may be considered as either primary, when the original site of the disease is in the iris or in the ciliary body; or, secondary, when an affection of neighboring parts has been transmitted to the iris or ciliary body, as in iritis with ulcer of the cornea. As far as our general information goes, every case of uveitis may be said to be of septic or of toxic origin, altho many cases of septic foci are not accompanied by iritis. Indeed, the iris does not seem to be readily accessible to

microbic invasion following injuries to distant parts of the body.

The characteristic exudate in chronic uveitis is the deposit of true precipitates on the posterior surface of the cornea, in the aqueous and in the vitreous, consisting of circumscribed, compact, spherical, cellular masses which enclose large nuclei. The cells may arise from the iris, the anterior portion of the ciliary body and possibly from the posterior portion. Pain may be absent when the choroid is the part chiefly affected, because of the absence of the sensory nerves in that portion of the tract. The course of the disease varies from, in some, a single attack with early and complete recovery; in others, as those of the "confirmed rheumatic habit," who suffer exceedingly from one or more attacks every year, each attack leaves the eye in a worse state; while there are others in which the poison acts with malignant virulence; and others still, in which blindness in one eye or both immediately supervenes; and still others which go on to destructive sympathetic ophthalmitis.

The origin of the affection is either exogenous or endogenous. Altho, one must admit that even by the elaborate and illuminating methods of examination now available, some cases must be regarded as nonbacterial in origin, with few exceptions, uveitis, or iridocyclitis, is not an isolated ocular disease, but depends for its development upon microorganisms and their toxins. The symptoms are the local manifestations of systemic infection, usually, and may be compared in their elemental aspects to the various connective tissue,

muscular and synovial membrane affections. In general terms, as there is a proliferation of the ciliary epithelium, it is probable that the toxic principle acts on the surfaces of the iris and of the ciliary body. The poison, therefore, must be present in the aqueous humor which it has reached thru the blood stream, having been derived from the body fluids as the result of general or organic tissue disease.

Chronic iridocyclitis, as comprehended by our definition, in my own experience, has been as uncommon during the first fifteen years of life as during extreme old age; it has been met most commonly between the twentieth and the fortieth years. It seems to be more common in young women, or in women of middle age or older, than in men. It is more than likely that climate has a distinct influence as an exciting etiologic factor, as more cases have been reported from northern observers than by those in warmer regions, and more during damp seasons than in dry.

The statistics of the frequency of primary uveitis among all classes of ocular disease vary considerably, from one per cent to three per cent. In the great majority of cases the infection is unilateral; bilateral cases do occur, but commonly such instances are not synchronous in their onset. In my own experience, as my memory recalled case after case during the preparation of this essay, one eye only has been involved, even in the cases manifesting violent recurrences.

We will not consider cases of iridocyclitis resulting from a wound of the corneosclera, nor from the toxemia derived from such wounds; but those cases dependent upon certain of the infectious diseases, excluding tuberculosis and syphilis; of certain internal areas of suppuration and of certain disturbances of metabolism. As ascertained by modern diagnostic aids, the most important factors tending to produce uveitis have been tuberculosis, syphilis, and gonorrhea; rheumatism, and gout, which are steadily being credited with a dependence upon focal infections; the acute infectious diseases such as diphtheria, pneumonia, influenza, epidemic meningitis, malaria, etc.

The association of uveitis, of the type

we are here considering, with acute rheumatic fever must be extremely rare, indeed it might be said to practically never occur, and yet the fact must not be overlooked that purulent matter, streptococci and staphylococci, might, by metastasis, lodge in the globe. In the course of chronic rheumatism, polyarthritis and more rarely, arthritis deformans, iritis does not set in until after the rheumatic arthritis has existed for years.

The etiologic connection between iritis, cyclitis, or iridochoroiditis and muscular rheumatism, the various types of myalgia and polyarthritis is of doubtful importance. It might seem wise, therefore, to discontinue the term "rheumatic" iritis, or iridocyclitis; and yet, as no satisfactory appellation has been suggested, it is recommended that the term be retained, because every one knows what is meant by its use. It is to be noted, however, that in recent years the search for focal infections thruout the body has been followed by such fruitful results, as to have greatly reduced the number of cases ascribed to rheumatism. The so-called rheumatoid forms of uveitis are manifestations of a toxemia, the nature of which is not yet understood; and the symptoms are but a localized expression of the cause operating thruout the body.

In regard to arthritis, or at least to arthritic pains, iritis may have been found associated, and it is to be noted that the association may be so marked that the increase in the joint symptoms and the excess of the iritis may occur synchronously. Doubtless the same cause which creates the joint affection gives rise to the uveitis, altho that cause has not yet been revealed; and, while there may be no visible evidence that these cases have been rheumatic, in my experience they have reacted generally as well as locally to the benefits of the salicylates. Accordingly, it may be accepted as true, that affections of the anterior segment of the globe, occurring in the subjects of the various forms of polyarthritis and muscular rheumatism, are but additional manifestations of the same infection or toxemia which causes the muscular and fibrous tissue pains and lesions. On the other hand, in the absence of definite knowledge concerning

the pathogenesis of rheumatism, a more explicit statement as to its causation cannot be made. Rheumatism and the rheumatoid diathesis are terms so loosely applied that all forms of septic absorption have been called rheumatic. Just here it might be noted, that while a generalized septic absorption from external necrosis is capable of producing iritis, it does not as a rule produce rheumatism.

GOUT.—It is rare that one nowadays sees the typical gout so frequently recorded by the practitioners of previous generations. It is many a day since I have seen any of my elderly friends, rich or poor, in his easy chair, with his foot swathed in bandages and propped up on a special foot rest; one finds such extraordinary pieces of furniture deposited in museums of old-time things in increasing number. And yet the idea is held by practitioners of wide private experience, that there is some relation existing between bodily gout and the various affections of the uveal tract, with which the victims of that disease are sometimes seized. Nevertheless, because of the mysteriousness of gout, thinking men are inclined to believe that that which has caused the general disease is at the bottom of the affection of the eye also. Still it remains in the minds of many that iridocyclitis in the gouty, might be caused, in all likelihood, by, or at least be associated with, the defective nitrogenous metabolism which underlies gout.

CAUSATION OF RHEUMATISM AND

GOUT.—It is rare that one nowadays gout are produced by infection, rather than by the malassimilation of protein compounds from the food, from which uric acid is produced, has been gaining ground in the minds of pathologists. Besides the fact that uric acid is a normal constituent of the blood, it has been ascertained that the amount is but slightly increased during gout; the deposition of it does not take place until after inflammation, the result of infection with its attendant toxins, has occurred. Instances have been observed of recovery from typical gout, often of long duration, consequent to the removal of foci of infection as in the teeth and tonsils. So also in rheumatism, bacteria from a focus of infection are disseminated throughout the body in the blood stream, clumps

of which block the small vessels about the joints; the joints themselves and the surrounding tissues being involved, to greater or less degree, according to the degree of infection and the virulence of the organisms. Such conditions interfere with the local blood supply and the nutrition of the infected tissues, and the conditions may be aggravated by general malnutrition and loss of tone in the circulatory system. Such, therefore, may be the case when the circulation in the region of the angle at the corneosclera is involved. The effect of colchicum, a remedy which has stood the test of the ages, is not so much that of a specific, as it is that of an accelerator of the circulation, and thru the action of that valuable remedy infection is combated because of the increase of white blood cells which are thus brought to the parts affected.

Be all this as it may, we know of men, and women too, of the full habit, and commonly beyond forty years of age, who rather enjoy telling us that they are gouty, as were their fathers before them, who, after a period of unusual eyestrain, or after receiving a slight traumatism, are attacked acutely by the old fashioned "hot eye." Such cases should always be kept under observation, and it is good practice to remind the individuals that they are "gouty" and insist on their reporting at short intervals for the reviewing of their refraction. And, I need not before this audience dwell long on the thought of the association of glaucoma with gout.

GONORRHEA.—Many of the cases ordinarily classified as rheumatic are in reality gonorrheal. The iritis commonly seen in young persons and in early adult life is in many cases dependent upon the gonococcus. One should always bear in mind the possibility of such a cause in the cases of chronic insidious uveitis as it occurs in women; and, it would be well to regard relapses of acute serous iritis as attributable to genital blennorrhea, even in persons who have not presented such a history. Gonorrheal iritis is probably not as frequent in private as in hospital practice, yet, because of the extraordinary vitality of the gonococcus, which enables it to generate toxins long after the blennorrhea has subsided, it is

likely that careful search in any baffling uveitis will yield a greater number. And, such cases of iritis might be greatly benefited by the treatment of the urethra and other mucous surfaces.

The involvement of the uveal tissues does not usually take place until the active symptoms of the blennorrhea are subsiding. Occasionally, at about the time of the ocular symptoms, there may be swelling of the joints and great congestion of the conjunctivae, with profuse exudation into the aqueous, sore throat from active tonsillitis and swelling of the testicles. Such symptoms are undoubtedly dependent upon the extension of the gonorrheal infection. Moreover, many cases of chronic iridocyclitis accompanied by exudation into the anterior chamber will be found to be of gonorrheal origin. All other causes being considered, most certainly the gonococcus cannot be excluded from the list of active factors in uveal disease.

DIABETES.—It has been my experience to have observed more or less intimately a somewhat large number of diabetics, and yet I cannot recall a case of the so-called diabetic iritis; my private records certainly contain none. Cases supposedly diabetic have been seen in the clinics, yet the relationship of the iritis to the general ill health of the persons was not satisfactorily worked out. The records available have yielded me inconclusive results; and I mention the affection only to include it among the dyscrasias, which, it is believed, can produce inflammation of the uvea. The formation of boils and carbuncles recurring so frequently in some diabetics may be reasonably considered to be of an infectious nature, and as such may be accepted as the explanation of the occurrence of the iritis; and yet, these so diverse symptoms might very well be expressions of a common infection. Altho iritis must be a most rare complex, at all events, just as in the case of gout, we are not unconvinced that the same cause which excited the defective nitrogenous metabolism and produced the diabetes, may not also produce nonbacterial inflammation of the uveal tract.

It is interesting to note, in considering the subject of ocular diabetes, with what rapidity surgical operations on the globes

of adult persons, who are afterwards discovered to be diabetic, are followed by malignant inflammation of the uveal tissues.

As has been already expressed, the evidence, clinical and bacteriologic, is in favor of the idea that the majority of cases of uveitis are caused by microorganisms or their toxins. The staphylococcus, as well as the gonococcus, bears a large part in the infections of the iris and ciliary body. The most frequent sources from which the staphylococcus reaches the uveal tract are chronic septic processes, in the mouth, as from pyorrhea alveolaris; in the tonsil; in the nasopharynx; in the accessory nasal sinuses; in the intestines, as from chronic appendicitis; in the uterine cavity; in the skin; and from boils and furuncles.

PYORRHEA ALVEOLARIS.—Lawford and Lang, by their independent investigations, have presented conclusive evidence of the dependence of uveitis on pyorrhea alveolaris, the reasons for which being, it would seem, the great prevalence of pyorrhea, and that infection from these cases may be presumed to be direct into the circulation.

There might be said to be two types of uveitis dependent upon dental infection. First, an acute iritis with extension to the ciliary body, accompanied by intense exudation into the tissues and clouding of the sight. Individuals thus affected usually have bad and decayed teeth and their mouths harbor virulent organisms in great abundance. The other type is seen usually in the cleanly, whose teeth are carefully inspected and treated by their dentists, who doubt the presence of deeper troubles until X-ray examinations disclose apical abscesses and gingival inflammations, the organisms from which possess a weaker virulence than that found in the other class. No specific type of infection appears to act as the causative agent, tho usually when the uvea is involved, there is a low grade chronic inflammation, which requires the radiologic study for the determination of the situation of it. This class presents a chronic uveitis, confined to the iris, with little or no tendency to exudation. The ocular condition may endure for years, at no time showing any great loss of vis-

ion, being marked by relapses and healing after simple treatment.

The groups are found perhaps twice as frequently in women as in men. When the cases are treated early they improve rapidly. The extraction of loose and of impacted teeth will almost miraculously relieve an attack of iridocyclitis which has resisted all other measures. I would call attention to the viciousness of certain rather popular dental practices. In my experience in these classes of uveo-dental disease, numerous subjects have had their teeth roots crowned, and many wore bridge prostheses anchored to devitalized and banded stumps. In another group have been those who had had artificial teeth pegged into excavated and bored roots. Neither of these are to be included in those with old broken and buried roots.

The subject of the effect of alveolar disease has assumed such prominence that one unfamiliar with the literature might regard it as a recent discovery. It is well that it has assumed such an importance, for only by that are we able to convince our patients of the necessity to sacrifice their old fangs. It is refreshing to note the modesty of Mackenzie, who so far back as 1845, quietly stated, in his chapters on uveal disease, that "the irritation of a decayed tooth, or stump, communicated thru the fifth nerve to the brain, and thence by reflection to the eye has produced the disease." And again, "In one case which I saw, the irritation arising from a decayed tooth seemed the cause. The disease declined rapidly after extraction of the tooth."

One might wish to digress for a moment to inquire further into the origin of the pyorrhea and the association of iridocyclitis with it. It must be admitted that the character of the present day food certainly favors dental decay. The chewing of hard and tough fibrous masses tends to stiffen, while soft, starchy and sticky food, requiring no mastication, surely relaxes the tissues in the dental sulcus, and decay ensues. Carious and dead teeth are always septic, and, as the dental sulci are difficult to drain, morbid particles enter into the surrounding tissues and from thence are propelled into the general circulation, thru either the vascular or the lymphatic system.

TONSILS.—The association of chronic arthritis with septic infection of the tonsils is now so well known and so sufficiently understood, that I need not make more than a reference to it and to ascribe a given case of uveitis to an effect of the tonsils; for next to pyorrhea alveolaris, and perhaps of equal, if not greater frequency as a source of origin of iridocyclitis, is chronic inflammation of the tonsils. The process may be identical with that occasioned by pyorrhea. Infectious organisms retained in the crypts of the hypertrophied tonsil excite ulceration, and on being cast off, fragments of highly septic material are absorbed into the blood stream and carried thence to lodge, it may be, in the thyroid, the joints, the appendix, the endocardium, etc. Repeated absorption of more or less attenuated septic fluid, by and by culminates, it may be believed, in inflammation of the iris, the choroid or the sclera. The tonsils and the lymphatic pharyngeal ring, therefore, should be investigated in the management of every case of acute and chronic uveal disease.

INTESTINAL.—It has been maintained, in even quite recent years, that intestinal autointoxication may be largely responsible for many cases of ill health; and, if, in the course of a vague intestinal trouble an ocular affection arises, and indican be found in excess, the eye disease, in all likelihood, may be ascribed to such an autointoxication. In the researches into the effects of pyorrhea alveolaris, it has been noted that affections of the teeth frequently produce disorders of digestion. In cases of uveitis regarded as dependent upon the absorption of toxins from the intestinal tract, the intestinal contents have been found to be highly acid; the *coli* bacillus absent, or present in small numbers only, the other organisms gram-positive in character. Indol and skatol, however, were present in large quantities, and in the urine indican in a quite high percentage. That cases do not arise more frequently from alimentary toxemia is due doubtless to the fact that the toxins "undergo the ordeal of the hepatic furnace." It is, however, not to be denied that certain cases are truly intestinal in origin, from an actual focus residing somewhere in that system; for if, after a most thoro exploration, no

focus can be found in the teeth and the tonsils, and the case fails to improve under treatment, some such focus might readily be suspected, especially if after every indiscretion in diet, relapses of an outbreak of serous iritis with an eruption of urticaria follow. Such persons in all probability exhibit an idiosyncrasy manifested as a protein sensitization for certain ingested foods.

It is incumbent upon us, when consulted in cases in which indicanuria is a prominent factor, to ascertain the exact state of the dental bodies, because the eye and the intestinal tract might be affected from a common source; moreover, a case of uveitis of dental origin might readily become aggravated by dental intestinal intoxication.

GENERAL DISEASES.—Many diseases and conditions have been brought into etiologic relationship with various types of iridocyclitis, notably the infectious diseases and the exanthemata. With the possibilities of focal infections before us, it is difficult to ascribe inflammations of the uveal tract to the specific organisms known to excite the general infectious diseases, excluding, of course, from this discussion, syphilis and tuberculosis.

Few general diseases are without pharyngeal symptoms; and, as dental, rhinopharyngeal and tonsillar infections are so common, it is all the more difficult to decide against the probability that the general disease has aroused a latent focal infection and thus produced the inflammation of the uveal tissues. Such reasoning might very well be applied in the explanation of the recurrence of iridocyclitis in the course of the epidemic diseases, notwithstanding the fact that meningococcus has been found in the lacrimal secretion and in the tissues, as well as in the aqueous exudate in cerebrospinal meningitis. It is this thought which one might hold in reference to malaria, and most certainly in influenza and parotitis. Uveitis has been noted as having occurred in the course of malaria. A number of years ago, I reported a case of marked iritis in a boy who had long been affected by malaria. And yet, the evidence is quite unconvincing that the action of the malarial organisms, alone, has produced the iridocyclitis. It is indeed a rare complication. So, also,

might one speak of dysentery, which it is true is an amebic infection by the bacillus dysenteriae; it might be likened to rheumatism, gout and gonorrhea, in that there are often joint involvements, and in the course of which iridocyclitis sometimes becomes manifest.

It has been assumed by Leber and others that an association exists between renal disease and iridocyclitis, and yet, it is indeed so rare, that in de Schweinitz's collective investigation only four cases were found.

It will be seen how great is the value of a thoro search for focal infections in the nose and its accessory sinuses; the tonsils; the buccal mucous surfaces, especially about the roots of the teeth; the skin; the pelvic organs, particularly when the uvea is affected during the puerperal state; the prostatic and seminal vesicles; and for the origin of gastrointestinal intoxications.

Investigation into the causes underlying inflammation of the uveal tract, according to Byers, resolves itself into a search for, first some systemic disorder of which the ocular disturbances is but an expression, as in syphilis and tuberculosis; second, some focus or foci of infection originating the uveitis by means of metastasis. And yet, as de Schweinitz has pointed out, a syphilitic might have a septic area which might not be of specific origin; and further, in the presence of a focal infection, the examinations must include those which determine whether or not there is a general infection also; and if, on the removal of one focus, symptoms continue, search must be made for the likelihood of another.

PATHOGENESIS OF BACTERIAL UVEITIS.—It is pertinent to inquire by what pathways infection is transferred to the eye, from the foci we have been considering. Anatomically and physiologically it does not appear possible that an infection can spread thru the lymph channels. And yet, it is to be noted that dental suppuration is found on the same side as the eye affected; only occasionally, indeed rarely, is it bilateral. Might not the observance of this disposition favor the supposition that the infection is transmitted thru the lymphatic channels,

if the disease is not extended directly from the diseased osseous cavities?

It is conceivable that toxic matter might be held in the blood in a greater quantity than the individual affected can assimilate, hence there would be created a residuum of toxin in the blood. One should consider all the factors; the toxins prepare the ground and the elements of strain or injury determine the site. A change from the normal occurs in the eye, which causes a decrease in the protective processes of that organ. A strain on the accommodation occurs, perhaps, as was so frequently the history in the gouty; or, there is a slight ciliary trauma, which is speedily followed by iritis, cyclitis or scleritis. And one must recollect the facts of the intimate connection of the teeth with the maxillary, the lacrimal and the inferior orbital sinuses, and especially of the intertwining of the various venous plexuses of these regions.

To carry analogy concerning the frequency of lesions about the ciliary region, or the iris and limbus, further, it might be thought that such localization might be due to the fact that here, as in the structures about the joints and the more tendonous portions of the muscles, there is a gradation of the supply of oxygen, which thus invites the settlement of bacteria and affords them an opportunity for their growth, an anatomic circumstance which by the same process would create lesions from the circulation of toxic substances derived from matter from septic sources wherever located. Lesions thought to be toxic, therefore, may really be infectious in their nature. Benedict concluded from his studies that iritis of focal origin is really an inflammation of the muscular tissues—a myositis.

The character of the ocular tissues favors the growth of bacterial organisms and the nervous sensibility succumbs to the bacterial toxins. In addition, their abundant blood supply conduces to the lodgment of the bacteria, and from the situations established they thence circulate thru the body fluids. At the region of the junction of the iris and ciliary body there takes place in the vascularity of the parts changes from a condition of high degree to one that is comparatively

avascular. Here, also, there is accordingly less hemoglobin and less oxygen, from which depletion bacterial growth actively flourishes. It is easy, therefore, to conceive that infection might be brought to such a region by metastatic conveyance.

The chief organisms obtained from studies of the bacteriologic contents of matter taken from dental sockets and roots were the streptococcus viridans; in others the staphylococcus, pneumococcus and bacillus pyocyaneus. In the acute infection, there has usually been found a mixed infection, streptococcus viridans and staphylococcus; in the chronic cases, staphylococcus chiefly.

In Benedict's opinion, the organisms found in iritis and in rheumatic affections exhibit affinities for both the eye and the joints and muscles, depending for their manifestations upon the part in which they are located; that is, it may be a spontaneous expression within the iris, or it may be acquired by growing on iris tissue. The affinity of an organism for special tissues may be lost when the organism is grown in different environments, and it may lose its virulence, or it may at one time attack the iris and at another time the joints and muscles elsewhere.

It has so happened, in clinical practice, that eyes have seldom been removed for such disease as we have been considering. The opportunities for laboratory studies have been limited to the examination of material from less vital organs, and to experimentation on lower animals.

From Woods' studies of the effects of bacterial cultures on the uvea of rabbits, we learn that reactions occurred to bacteria prodigious; that the poison generated was not directly due to ferment activity, but to a degenerative product formed from the bacterial body and the protein of the culture media, thru the proteolytic action of the bacterial ferments. The poison, which is a ptomain, when injected intravenously excited the clinical symptoms observed in the animal.

Rosenow, in carrying on a series of studies on rabbits, injected streptococci obtained from rheumatic subjects, from appendiceal abscesses, pyorrhea alveolaris, suppurating tonsils, etc., which pro-

duced acute iritis or iridocyclitis, the lesions consisting of red blood cell extravasations and leucocytic infiltration.

The etiology of only too many cases of chronic iridocyclitis remains obscure, altho one is inclined to believe them to be of a metastatic nature; and, in the midst of this obscurity one should ascribe greater importance than is given to the consideration of "colds" as a factor in the metastasis of any latent morbid agents thruout the body. So, again, one might plead, that because the complaints of the rheumatic are exaggerated in cold damp weather it would appear advisable to retain the name rheumatic iritis at least a little longer. And, as there are cases, the so-called "idiopathic," in which a definite specific cause cannot be ascertained, which depend on general disease at present unknown to us or are of obscure infections, the term may be continued to express our ignorance, yet in the light of present day research it no longer should be used.

It has not been the purpose of this

presentation of the causation of uveitis to consider the probability of a given case being the subject of tubercular or of syphilitic infection, altho the importance of either, or both, of these as etiologic factors in any or all cases has not been overlooked. No case which seems to be obscure should be allowed to go without the systematic tests for these two classes of infection, and the possibility of their presence should be constantly maintained in our minds.

This essay is based on the classical communications of Fuchs and de Schweinitz on the Pathogenesis of Chronic Uveitis, at the Section of Ophthalmology of the XVII International Congress of Medicine, London, August, 1913, and a survey of the literature since that date. I have not burdened my listeners and subsequent readers with the voluminous bibliography which has accumulated during the past decade, for such can be obtained in the issues of the "Ophthalmic Year Books," and "Ophthalmic Literature."

INCREASE OF HYPEROPIA IN DIABETES.

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This paper is based on a candidate's thesis for membership in the American Ophthalmological Society. The unabridged thesis, containing abstracts of other reported cases, will be found in the Transactions of the American Ophthalmological Society, volume 18, p. 408.

The ocular complications that occurred in a series of 477 cases of diabetes, reported by von Noorden¹, showed eye involvement in 27.9. In 259 of these, diabetes was the only etiologic factor; 80 per cent were over 50 years of age.

The defects found were as follows:

Retinitis	81
Retrobulbar neuritis	23
Optic nerve atrophy	18
Cataract	62
Iritis	2
Amblyopia without organic change	33
Diabetic myopia	21
Other conditions	39

Undoubtedly among the latter group of 39 cases is the change in refraction which is the subject of this paper, namely, an increase of hyperopia.

This is by no means a common com-

plication of diabetes, but one that should always be kept in mind.

Five such cases have occurred in my practice, one of which has already been reported².

Drs. Cassius D. Wescott and John B. Ellis³, of Chicago, in a paper read before the Eye Section of the A. M. A. in 1911, covered the literature of this condition very thoroly. To their review of the literature the following are to be added:

Dr. M. H. Post⁴, of St. Louis, reports a woman, age 59, for whom, in May, 1916, he had prescribed:

O.D. + cyl. 0.25 ax. 180 = 20/15.
O.S. — sph. 0.75 C + cyl. 0.87 ax. 180 = 20/19.

With + 2.50 added she read 3.5 point type at 14 inches. On July 3, 1916, she reported that she could not

see well with her glasses, and her vision with them proved to be O.D. = 20/96; O.S. = 20/120. Two days later her vision was O.D. = 20/38; O.S. = 20/48. July 10, 1916, her refraction was:

O.D. + sph. 0.75 \ominus + cyl. 0.25 ax. 180 = 20/15.

O. S. + sph. 0.25 \ominus + cyl. 0.87 ax. 180 = 20/15; an increase of hyperopia of 0.75 in her right and 1.00 in her left. For reading she took an addition of + sph. 2.25. November 20, 1916, her vision had returned to the condition prior to the onset of her diabetes.

Dr. Fred M. Spalding of Boston reports to me in a letter dated December 18, 1919, the case of a woman, aged 29. "The second day after starvation was begun she noticed considerable blurring of vision which has persisted. She had worn glasses since she was twelve years old and had not had them changed any more frequently than is usually the case. The last change was last October. The diabetes was discovered last August. She was wearing the following correction:

O.D. — sph. 0.25 \ominus + cyl. 1.00 ax. 90

O.S. — sph. 0.50 \ominus + cyl. 1.75 ax. 90

She claimed that she saw perfectly well with these and could use her eyes without any discomfort before the diet was begun. She accepted the following.

O.D. + sph. 3.50 \ominus + cyl. 1.50 ax. 90

O.S. + sph. 3.00 \ominus + cyl. 2.00 ax. 90

With this correction she read 20/15 each eye. There was no loss of accommodation. Tension was normal in each eye."

My first case was reported² under the title "Report of a Case of Transient Cycloplegia due to Glycosuria." At the time this paper was written, I thought the condition was due to a partial cycloplegia from involvement of the ciliary muscle, but in the light of other cases reported I now regard it as simply an increase of hyperopia. The history of this case is as follows:

Mr. W—, aged fifty-one, first consulted me March 30, 1908, concerning a tickling in his throat, which had troubled him for about two weeks. He was coughing a great deal, he felt and

looked sick, and he had recently lost flesh.

Examination showed that his uvula was thickened and elongated, fauces congested; right cord somewhat immovable, irregular in outline, and reddened near the arytenoid cartilage.

Fearing that a tuberculous process might be commencing in his lungs, I advised him to consult a general physician for a physical examination. He placed himself under the care of Dr. Joseph D. Condit. Dr. Condit reported to me that there was no evidence of tuberculosis, but that his urine contained 7% of sugar.

Under appropriate diet, the sugar began to lessen, so that by the 7th of April, it was down to 5 5/8%, and his weight, which was 133 pounds, began to increase. By the 29th of April, all sugar had disappeared from his urine, and, when last observed by Dr. Condit on the 22nd of July, his weight had increased to 142 pounds.

On the 15th of April, when he had been under Dr. Condit's care for two weeks, his urine showed only 3/8% of sugar. At that time, he came to me again, saying that for a few days past he had been unable to read with his glasses, which had theretofore been perfectly satisfactory, and that he now needed them to see with in the distance. Until he noticed this failure of his glasses for reading, his vision for distance had been perfect; but now he could not see in the distance without the use of his old reading glasses.

I found that he had been using for reading a pair of + sph. 1.75. At that time.

O.D.V. = 6/22.5.

O. S.V. = 6/15.

Manifest examination showed:

O.D. + sph. 1.75 = 6/5.

O. S. + sph. 1.75 = 6/5.

1½ esophoria.

For reading at thirteen inches, he required to be added to the above + sph. 2.25.

External examination of the eyes showed everything normal; pupils were of normal size, and they reacted to light and accommodation. Ophthalmoscopic examination showed the media clear and the fundi normal. A

test on the following day confirmed this examination, so I ordered the foregoing lenses for him.

On the 18th of May, he came in again very much improved in his general health. He said that until within a few days, these last glasses had been perfectly satisfactory; but that now he could not see so clearly in the distance with them, and he found that he had to hold newspapers and books too close to his eyes to read with comfort. His vision with his distance glasses now was only 6/12.

Manifest examination showed:

O.D. + sph. 1.00 = 6/5.

O. S. + sph. 0.75 = 6/5, with + sph. 2.25 for near, and these I ordered.

Shortly after this, Mr. W— returned to his home in the East. In a letter, dated Feb. 8th of this year (1909), he wrote me that his eyesight was very much better than when he was in Pasadena last year. His accommodation continued to return, so that it was necessary for him to go back to the original reading glasses which he was using when he first came to me.

I now wish to add four more cases taken from my records.

Case 2. Mrs. O. L. B—, aged 54, was in May, 1910 given the following glasses:

O.D. + sph. 2.00 \ominus + cyl. 0.25 ax. 90 = 6/6.

O.S. + sph. 0.50 \ominus + cyl. 0.50 ax. 90 = 6/6, with + sph. 2.25 added for near.

In October, 1915, she complained that rather suddenly she had had difficulty in reading with these glasses. I then found that she accepted the following:

O.D. + sph. 2.00 \ominus + cyl. 0.25 ax. 90 = 6/9 + 3.

O.S. + sph. 2.25 \ominus + cyl. 0.50 ax. 90 = 6/9; with + sph. 2.50 added for near.

Her media were clear and her retinæ normal.

November 9, 1915, she came in saying she was now unable to use her new lenses, as with them distant vision was greatly blurred and her reading focus too short. On questioning her, I learned that she had recently dis-

covered that she had diabetes, and that for the past six weeks she had been on a rigid diet.

She now accepted:

O.D. + sph. 0.75 = 6/7—3.

O.S. + sph. 0.50 \ominus cyl. 0.50 ax. 90 = 6/7—3; with + sph. 2.50 added.

Case 3. Mrs. S—. Age 53.

January, 1915, I gave her for her right eye: + sph. 1.25 \ominus + cyl. 0.50 ax. 180 = 6/5. The left eye was practically blind from an old chorioretinitis.

In May, 1917, she could get only 6/15 with this lens and required + sph. 2.75 \ominus + cyl. 0.75 ax. 180 = 6/9—2; with + sph. 2.50 added. I found that she was suffering from diabetes. Her right nerve was slightly swollen. Oct. 25, 1917, she returned to her original lens, but could get only 6/12 vision.

Case 4. Mrs. G. A. B. Age 55.

In April, 1915 I prescribed the following lenses:

O. D. — sph. 0.50 \ominus — cyl. 0.25 ax. 120 = 6/5.

O.S. — sph. 0.50 \ominus — cyl. 0.25 ax. 60 = 6/5; with + sph. 2.25 added.

During 1917 she developed diabetes, but showed no eye symptoms until April 1918, when she found that she had to use her reading glasses to see in the distance. At this time she was in the hospital undergoing treatment, and had become sugar free after having had as high as ten per cent. She now required for each eye + sph. 3.50 = 6/7; no fundi changes. In about three months she returned to her old glasses and has used them ever since. She tells me she has not been entirely sugar free since leaving the hospital. She is on a restricted diet, and at times her vision blurs. At such times she finds if she eats forbidden articles of food, such as white bread, she at once feels better and her vision improves.

Case 5. Mrs. L. J. B—. Age 66.

When this patient consulted me Sept. 19, 1919, it was for the purpose of determining whether or not her glasses needed changing. She had been wearing for eight years:

O.D. + sph. 0.50 \ominus + cyl. 0.50 ax. 50.

O.S. + cyl. 0.50 ax. 120, with + sph.

2.50 added, and gave no history of eye trouble. She accepted:

O.D. + sph. 0.50 \odot + cyl. 0.75 ax. 40 = 6/5.

O.S. + sph. 0.25 \odot + cyl. 1.00 ax. 155 = 6/5; with + 2.50 added.

Aside from a few spicules of opacity in her left lens, her media were clear and her fundi normal. Noticing an acetone odor to her breath, I suggested a urinalysis, and seven per cent sugar was found. Her physician put her on the Allen diet, and inside of two weeks she was sugar free. She returned to me on Oct. 17 and said she could not see with either her old or new glasses. I found that she required + sph. 3.25 added to her right lens and + sph. 2.75 added to her left lens, which gave her 6/5 vision each eye, with + sph. 2.50 added for near. I assured her she would need these stronger glasses but for a short time, which was the case, for in three weeks she returned to the lenses I first ordered, and is still wearing them.

Of my five cases, four were women. The youngest was 51, the oldest 66. Case 3, was the only one showing fundus changes, and these were probably due to an intercurrent disease. This and Case 2, are the only ones of the five who did not get normal vision with subsidence of the hyperopia.

Dr. E. P. Joslin, of Boston, an authority on diabetes, writes that he thinks "the whole explanation is connected with the marked changes in per cents of sugar and salt in the blood, and may be associated with the blood volume as well, but as yet that is not proven." In the second edition of his book on "The Treatment of Diabetes Mellitus", page 437, he says: "One cannot too frequently impress upon the patient that treatment is instituted not simply to keep sugar out of the urine, but to save him from a great variety of serious incidental diseases. Conversely, with the institution of progressive treatment the eyesight often temporarily fails. . . . The explanation of this condition is undoubtedly due to changes in the water balance of the body and the disappearance of sugar. These incidentally involve the lens, causing refractive

changes." In his case No. 924, he reports Dr. F. M. Spalding as recording "a shrinking and flattening of the lenses." I wrote Dr. Spalding about this case and in reply he writes:

"I have tried to explain these cases by the effect which the loss of the sugar content must have on the tissues of the media of the eye. It is a question in my mind how much the lens can change, on account of the character of its tissue and the mode of its nourishment. It is hard for me to conceive, as in the case cited, how such a rapid change could take place, if it were confined to the lens alone. I am more inclined to believe that the condition is due more to some change in the refractive index of the media."

Four of my cases (case 3 being the exception) noticed the loss of vision coincident with the lessening or disappearance of the sugar. This is more than a coincidence, for other authors have made the same observation. The rapid disappearance of sugar from the urine does, we know, lessen the blood sugar. If, at the time the carbohydrates are cut down to decrease the sugar, there is a lessening of salt intake, a rapid loss of weight occurs thru the inability to retain water in the body, and this is accompanied with a loss in the blood volume. Increasing the salt in the diet, or giving the patient a mineral water containing salt, restores the balance and a gain in weight is at once noticed. This change in the blood volume, together with a lessening of the per cent of sugar and salt in the blood could bear out the theory of Landolt⁵ that there is an alteration in the refraction index of the vitreous, as well as Horner's⁴ theory of a loss of fluidity of the vitreous. The alteration of the blood content and volume just mentioned, could also bear out the theories of Van der Hoeve and Grimsdale, as quoted by Zentmayer⁶ "that the diminished refractive condition is due to an increase in the index of refraction of the cortical layers of the lens, whereby a more uniform index is acquired by the whole lens and a consequent reduction in the total refractive power." My contention, therefore, is that the increase of hyperopia seen in

our diabetic patients is not due to lens or vitreous changes alone, but to a combination of the two, caused by a lessening of the amount of sugar and salt in the blood and an alteration in

the blood volume. As yet, these claims have not been proven, but I believe they will be before long in our physiologic laboratories where diabetes is now being studied as never before.

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LENS ANTIGEN (VACCINES) USED TO ABSORB CORTICAL MATTER AFTER THE EXTRACTION OF CATARACT.

A. EDWARD DAVIS, M.D.

NEW YORK.

The case herewith reported is of interest from two points of view: (1) Lens material surrounded by lens capsule was completely absorbed; (2) a soft eye (Hg. mm. 5) the result of a severe inflammation following the operation, was restored to tension Hg. mm. 13, and following a needling, vision 15/30 minus was obtained.

CASE.—May 25, 1922—L. B. B. aged 73, in perfect health had his right eye operated upon by a confrere in October 1921, a combined operation. Ten days after the operation a severe inflammation set in, which kept the patient in the hospital for more than seven weeks. When the patient came under my care the following entry was made: R. V. equals Pl.; L. V. equals 15/200: 15/100 plus with minus 3.50 D. Right eye somewhat sunken and soft (Hg. mm. 5), slight circumcorneal flush; thick membrane with some lens cortex in upper part of the pupil included in a fold of the lens capsule, the lower edge of the membrane is adherent to the iris; large floating masses in the vitreous; faint light reflex. Left eye, immature subcapsular cataract, slightly shallowed anterior chamber, pupil normal. Patient is in first class general health. Since the patient was a little shaky about an operation on the other eye, I proposed that he take some injections of lens

antigen to absorb the cataract in the left eye, or at least arrest its progress; to this he consented. No thought of helping the soft right eye with barely light perception was entertained. An intracutaneous sensitization test was given, which caused but a very slight reaction at site of the injection. May 26, lens antigen (beef) injections, triweekly, subcutaneously were begun, 1/2 c.c. increasing the dose 1/2 c.c. at a dose, until the maximum dose, 4 1/2 c.c., was reached, June 28th. The total amount of the remedy given up to this date was 50 1/2 c.c. All redness had disappeared in right eye and it was firmer, and light perception much quicker; the left eye remained the same. As I was going away for the summer, treatment was discontinued. No reactions followed these injections save slight redness at site of injection.

Oct. 2, 1922; the patient had a good summer. R.V. equals fingers 8 ft. L.V. equals 15/100 plus w. minus 3.50 D. The right eye is quiet, part of the lens cortex is absorbed, tension has improved; no change in left eye, either as to vision or clearing of the lens. Injections of lens antigen were resumed, beginning with 1/2 c.c. and gradually increasing dose (triweekly) until Nov. 13th, when as high as 8 c.c. at a single dose was given, 93 1/2 c.c. of the

remedy being given in this second series of injections. At this date, the *tension of the right eye had increased to Hg. 13 mm.*, all the cortex lens material had absorbed and V. equalled 15/200. A membrane still blocked the pupil however.

The cataract in left eye had cleared slightly, V. equals 15/70 with minus 3.50 D. Nov. 23rd, the patient was sent to the hospital, where with a narrow cataract knife, I made a clear horizontal incision thru the membrane in the right eye. There was no reaction, a clear pupil was obtained and on Dec. 9th, with plus 10 D. combined with plus 3 D. ax. 90, the patient obtained 15/30 minus vision.

Following the suggestion of G. Burdon-Cooper, in the Doyne Memorial Lecture, Etiology of Cataract¹, that potash is valuable in the retardation of cataract formation, in beginning the second series of lens antigen injections

in this case, the patient was placed on small doses of potassium iodid, 15 grs. in full glass of water after meals.

To judge from one case, which is of course hazardous, it would appear in those cases following cataract extraction, in which considerable lens cortex has been left, that lens antigen injections are indicated. It goes without saying, that the sensitization test should be made before the treatment is begun. Not the least pleasing phase in this case is, that the tension of a softened eye should be sufficiently restored to justify further operative measures.

In closing, I may say, I am using lens antigen injections in all cases of traumatic cataract, where the sensitization test does not show the patient hypersensitive to the lens antigen, and when secondary glaucoma is not present.

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NOTES, CASES, INSTRUMENTS

MONOCULAR INTERSTITIAL KERATITIS.

JOHN N. HOFFMAN, M. D.
CANTON, OHIO.

The following case is deemed worthy of report because of two interesting features. One is the age of the patient, and the second is the fact that the pathology has been confined to one eye. The patient is a young lady aged 22. The previous history is negative, and the family history secured from the parents is also negative. The patient is a college graduate, and a teacher by occupation. She was first seen in June 1922, about six weeks after the onset of her eye symptoms, having been under the care of an oculist of wide experience.

When first seen her left eye presented the appearance of a typical interstitial infiltration of the cornea. Her treatment had consisted solely of the use of atropin in the affected eye

three times daily. A general examination revealed none of the signs of lues, altho the blood Wassermann was strongly plus. She was put on intensive antiluetic treatment, and was referred to another oculist for his opinion as to the etiology. He also thought the condition as luetic in origin.

The reaction of the blood Wassermann has been very obstinate, altho the proper general treatment has been vigorously given. Several subconjunctival injections of mercuric cyanid and novacain following the method of C. A. Campbell, as described in the December 1920 number of the American Journal of Ophthalmology (v. 3, p. 884) have been painlessly given, at intervals of seven to ten days. Vision has slowly improved from hand movements at one meter to 4/30.

Physical examinations have been negative, and the diagnosis of an interstitial keratitis probably due to congenital lues seems to be the most

logical. This case also emphasizes the great value of Wassermann reactions in all suspicious cases, no matter how much above reproach the personal and family history may be.

By intensive antiluetic treatment in this case is meant the use of mercury by inunctions and per mouth. For fear of exciting the process in the other eye the arsenic preparation were not given intravenously.

KERATOCONUS.

Iridectomy and Corneal Trephining With a Conjunctival Flap.

GEORGE W. JEAN, M.D.

SANTA BARBARA, CAL.

Spanish girl, age seventeen years, was first seen October 27th, 1922.

Previous history: Weight 128 pounds, height 63 inches. Usual diseases of childhood, typhoid six years ago, absolutely no illness since then. Parents, three sisters and four brothers—no eye trouble. Vision has been getting bad in each eye for the last year, and she has had frequent changes of glasses. In school until one year ago. Physical examination by an internist negative.

Eye examination: Vision, right eye, equals fingers at four feet; vision, left eye, equals fingers at twelve feet. Vision, each eye, unimproved with glasses. Corneas were conical. The right eye was slightly injected and the tip of the cone was opaque over an area of 2 mm. and denuded of epithelium. Two small, narrow streaks of opacity ran inward nasally from the tip of the cone for 2 mm. The right and left cornea measured 10 1/2 mm. in diameter with Wessely's keratometer, and the measurements taken laterally with the keratometer showed the distance from the limbus to the apex of the right cornea to be 5 mm.; left cornea, 4 mm. The apex of the right cone was 1 mm. below the horizontal meridian and 1 mm. to the nasal side of the center. With the exophthalmometer the readings were, right, 18 mm.;

left 17 mm. Tonometer (Schiötz): Right eye with 7 1/2 wt. — 11 = 10 Hg. mm.; left eye, 7 1/2 wt. — 11 = 10 Hg. mm. With the ophthalmometer, the mires were so small and separated and overlapped so violently that no reading could be gotten. Retinoscopy unsatisfactory. The left cornea was clear and the left eye white. I could get no pulsations in either cornea with oblique illumination, the ophthalmometer or the slit lamp.

Operations: Iridectomy, right eye, upward, same day (October 27th). Atropin 3%, firm bandage. Daily dressings until November 3rd, when the opaque apex of the cone was trephined with a 2 mm. Stevenson's trephine which had to be done carefully because the cornea dented easily. No traumatic cataract followed. The button was cut off with a small iris scissors rather easily. The conjunctiva was freed from the limbus above, nasally and below, undermined and a heavy conjunctival flap drawn over the trephine opening and anchored with a mattress suture thru it and the conjunctiva above and below. Atropin, firm bandage, binocular dressing. Dressing and atropin daily. The anterior chamber was definitely reformed November 6th. Stitches out on the fifth day, and the flap allowed to retract since it had served its purpose. Patient was discharged from the hospital November 13th. On November 16th: Vision was 20/30 plus two with +4. sph. = +7. cyl. axis 165. Patient was seen daily, and this eye was kept under a built-up dressing over which was put an elastic webbing, two inches wide, constructed with a series of hooks and eyes at the ends, and kept fastened as tightly as she could possibly stand the pressure on the eye ball.

Discharged, December 8th, 1922. Vision, right eye, with +2. sph. \ominus +8, cyl. axis 165 equals 20/30. The apex of the cornea was about 2 mm. flatter than before the operation, measured by the keratometer and the exophthalmometer. Tension was still 10 Hg. mm.

SOCIETY PROCEEDINGS

Reports for this department should be sent at the earliest date practicable to Dr. Harry S. Gradle, 22 E. Washington St., Chicago, Illinois. These reports should present briefly scientific papers and discussions, include date of the meeting and should be signed by the Reporter or Secretary. Complete papers should not be included in such reports; but should be sent to the Editor, with a note, being read before the Society, and the date. The form of the copy should be similar to that used below.

COLORADO OPHTHALMOLOGICAL SOCIETY

November 18, 1922.

DR. E. F. CONANT presiding.

Steel in Vitreous.

W. C. AND W. M. BANE, Denver, presented a man, aged fifty-two years, whose left eye had been penetrated by a splinter from a steel key which he had been striking with a hammer. There was the usual history that a general physician was supposed to have removed a foreign body from the surface of the eye. After this the eye had remained relatively comfortable. Examination revealed a small foreign body in the cornea 2 mm. from the temporal margin, and behind this was a 1 mm. opening in the iris. X-ray study indicated a foreign body 1 by 1 1/2 mm. located in the vitreous 10 mm. behind the anterior pole of the eye, 8 mm. below the horizontal plane and 1 mm. to the nasal side of the center. The fragment of steel was easily removed with the hand magnet thru an incision in the sclera back of the ciliary body and below the external rectus muscle. Vision with correction was 5/10. The case emphasized the extreme importance of X-ray examination in such cases.

Discussion.—W. H. CRISP, Denver, suggested that specimens of steel splinters extracted from the eye could be very conveniently preserved by carrying each one in a one or two dram vial alongside a pledget of cotton, on the other side of which a strip of paper showing the name and date was also introduced into the vial.

G. L. STRADER, Cheyenne, Wyoming, referred to cases which had come to him after being treated by general physicians for supposed simple irritation of the eyeball; one such case having come with a piece of steel in the eye for three weeks. Dr. Strader recited several cases in which, being inconveniently placed for satisfactory X-

ray localization of magnetic foreign particles, he had drawn the foreign body forward against the iris with the giant magnet, and had then extracted the foreign body thru a peripheral incision in the cornea, sometimes drawing the foreign body to the side of the pupil opposite to that on which it first appeared.

E. E. McKEOWN, Denver, referred to a case in which a piece of steel 8 by 12 mm. had been extracted thru a posterior scleral incision, and in which fourteen days after the operation the eye was doing fairly nicely. In another case, on removing a cataract of unknown causation, a piece of steel was found embedded in the center of the lens.

W. C. BANE (closing) thought that X-ray localization should always be obtained if possible, and that it was not wise to try to get evidence of the presence of a magnetic foreign body by producing pain with a strong magnet. **Trachoma Pannus; Rolling Operation Unsuccessful.**

W. C. AND W. M. BANE, Denver, presented a man, aged twenty-one years, whose eyes had been diseased for one year. There was a velvety granular condition of the palpebral conjunctiva of each eye. The upper three-fourths of the right cornea, and the upper half of the left cornea, were covered with pannus. After the Knapp roller forceps had been used on the right upper eyelid, the eye had become very much worse, the vascularity of the cornea increasing. Some improvement had since followed the use of a 3 per cent solution of sodium salicylat.

Discussion.—C. E. WALKER, Denver, I do not think this velvety appearance of the conjunctiva acts well under any surgical manipulation. The ideal treatment of these cases is with silver nitrat, washed out with physiologic salt solution. While using silver it is desirable to keep the eye fully under atropin.

Cataract with Anterior Synechia.

W. C. AND W. M. BANE, Denver, presented a man, aged seventy-three years, whose right eye had been removed many years earlier, and who had come on account of failure of vision in the left eye. This eye presented an anterior synechia which had resulted from an ulcer twelve years earlier, the pupil was very small, and upon using homatropin, cataractous changes were found in the lens. The vision was 1/60. An attempt had been made to separate the anterior synechia with a needle knife, but this attempt was only partially successful. Two days later an optical iridectomy had been performed. The vision was now 2/60, not improved by lens. Some hesitation was felt as to performing cataract extraction on this eye, in view of the fact that it was the patient's only eye.

Right Retinal Detachment, Left Glaucoma.

W. C. AND W. M. BANE, Denver, presented a man, aged fifty-seven years, who, in February, 1919, had suffered a detachment of the upper portion of the right retina, which in the course of three and a half years had led to phthisis bulbi; and whose left eye had recently developed glaucoma, with steadily rising tension. The right eye had been enucleated on August 30, 1922. With the left eye the patient could not now see his own hand.

Unusual Form of Keratitis.

W. C. AND W. M. BANE, Denver, presented a man, aged sixty-four years, a flue cleaner by occupation, who had come in June, 1922, complaining that his vision had been gradually failing for the past three years. At the beginning of this period he had got a lot of fine hard dust in both eyes, which had troubled him for several days. Vision at the time of examination was R. 5/15, L. 5/30, improved by correction to 5/10 and 5/12 respectively. Examination showed a finely mottled gray appearance of the epithelial layer of each cornea, covering an area of about 7 mm. in diameter.

The gray appearance was densest at the center, with here and there some pin point pits. A little away from the center of the left cornea was a small brown deposit. Taken roughly the fields were normal. The pupils were normal in reaction, and altho a clear view of the fundi was not obtained the fundus reflexes were sharp.

Discussion.—W. A. SEDWICK, Denver, said that the old gentleman had very bad teeth, and that this was probably responsible for the condition of the eyes.

Diabetic Cataract.

JAMES M. SHIELDS, Denver, presented a man, aged thirty-six years, who had been suffering from diabetes, and who had almost completely lost the vision of the left eye in the course of between five and six weeks. The loss of vision was due to the rapid formation of a diabetic cataract. The right eye presented no fundus or lens changes. The vision of the left eye was now limited to shadows.

Persistent Canal of Cloquet.

JAMES M. SHIELDS, Denver, presented a boy, aged nine years, who had been sent in by the school teacher for refraction. The corrected vision of either eye was normal. In the right eye a persistent canal of Cloquet ran almost straight from the center of the optic disc forward and outward to the extreme temporal side of the posterior capsule of the lens. At a point exactly anterior to the opacity, on the posterior capsule of the lens, was a slight flattening of the corneal limbus. There was also an opacity a little below the horizontal at the extreme nasal side of the posterior capsule of the lens.

Discussion.—EDWARD JACKSON, Denver. The remains of the canal of Cloquet is exceptionally large in this case. The particle of tissue attached to the crystalline lens is also placed unusually toward the nasal side.

Oculomotor Paralysis.

J. S. HILL, Cheyenne, Wyoming, (by invitation) presented on behalf of G. L. Strader a man, aged thirty-eight years, who had come on October 31

complaining of double vision and inability to open the right eye. He thought the disturbance had arisen in connection with the filling of a pyrene can. Fifteen years previously he had what had been diagnosed as a chancre, and had taken some internal treatment for five months. He had never noticed signs of the secondary or tertiary stages of syphilis. There was complete ptosis of the right upper eyelid, and the right eye turned outward and slightly downward. The pupil was widely dilated. The vision with a minus sphere which he was wearing was 20/50 in each eye. The teeth were badly diseased. A blood Wassermann test was negative. Nevertheless, the case was regarded as one of paralysis of the motor oculi, probably of luetic origin. The patient was put on potassium iodid. All of the teeth were extracted, and almost all were found to be infected. After one week a distinctly positive blood Wassermann test was obtained. The potassium iodid had been increased to fifty grains three times a day, but there had been very little improvement in the use of the muscles supplied by the third nerve.

Discussion.—G. F. LIBBY, Denver. In the past month I have had a similar case in a woman of thirty-seven years, in combination with a retrobulbar optic neuritis. After one dose of 606 there was marked improvement, the ptosis disappearing, and the inferior rectus recovering to the point where there was no diplopia except on looking down. The vision, which recovered to 5/20, afterward dropped back to 5/60, showing that the optic nerve is still feeling the effect of the toxin. I had Wassermann tests made by two pathologists, one of whom reported the result as plus 2 to 3, and the other plus 4.

Optic Atrophy from Pituitary Disease.

H. R. STILWILL, Denver, presented a girl, aged seventeen years, who had come on account of poor vision and attacks of dizziness. She had begun to menstruate at fourteen years, but menstruation had stopped eighteen months before report and had not re-

appeared. At about five years of age she had begun to show weakness in her legs, and had waddled in walking. About eighteen months before report, she had had nausea and vomiting for one day, and similar attacks recurred for five months at intervals of two or three weeks. Then the vision became cloudy. About three weeks later she fell to the floor with loss of consciousness, but no jerking. Several other attacks of dizziness and unconsciousness occurred. The vomiting spells were accompanied by severe headaches. In a later attack of unconsciousness which lasted for two days, there was loss of sphincter control. The vision had been completely lost about December 19, 1921. The dizzy attacks had recurred at intervals of three or four weeks. There was some roaring and buzzing in the left ear, but without apparent diminution in hearing. The patient had gained ninety-two pounds in weight in the past sixteen months, but could walk as well as for the past twelve years except for the blindness. She now felt well, had no headaches, no dizziness, no nausea, and no pain. The appetite was good, the bowels regular, and she slept well. The weight was 202 pounds. The speech was clear, the memory good, and the patient seemed to be bright. She presented an unusual amount of evenly distributed subcuticular fat thruout the face, neck, trunk, and extremities. There was a slow nystagmus. The optic discs were white. The consensual reaction of the pupils was present when a light was flashed in the right eye. Roentgenographic examination showed marked enlargement of the sella turcica, and partial absorption of the posterior clinoid processes; these indications being interpreted as probably due to enlargement or tumor of the pituitary gland. Examination of the spinal fluid was negative.

Discussion.—EDWARD JACKSON, Denver. The general aspect of this case is the aspect of what has been called Fröhlich's syndrome.

D. A. STRICKLER, Denver, suggested that the case might be operable thru the nose.

C. E. WALKER, Denver, referred to a case shown by him some time previously, in which operation had not been attempted. Dr. Walker had recently heard that the young man was dead.

Microphthalmus.

J. A. McCaw, Denver, presented a baby boy who had been born with right microphthalmus. The other eye was absolutely normal, and the child was healthy in every other respect. The parentage and family history were excellent. The eyelids were normal and were completely differentiated from the eyeball. There was about a 3 mm. cornea, and behind this was a corresponding area of iris tissue.

Discussion.—W. H. CRISP, Denver, I saw the case some months ago, shortly after birth of the child, and do not believe there has been any appreciable change except freer opening of the eyelids. I do not favor any action until the child is well into the age of puberty.

G. L. STRADER, Cheyenne, Wyoming. What would be the objection to wearing a small artificial eye over the natural eye?

Dr. CRISP felt that at the present time there would be no real advantage in the wearing of an artificial eye, and that this might act as an irritant.

Dendritic Keratitis.

W. H. CRISP, Denver, presented a physician, aged twenty-seven years, who for about a week had been suffering from an inflammatory condition of the left eye, associated with photophobia and excessive lacrimation. There was a typical, almost fern like branching shallow defect in the upper part of the cornea, with the merest suspicion of staining under fluorescein. Atropin had increased the inflammatory reaction, and the eye had become more comfortable under pilocarpin. The disturbance had followed a sharp febrile reaction, probably due to a brief grippy condition. There were two or three definitely suspicious dead teeth. (The patient made a good recovery in the course of the next two weeks, without other treatment than rest from work and a mild tonic).

Discussion.—JAMES M. SHIELDS, Denver, mentioned a case in which improvement had rapidly followed the extraction of bad teeth.

H. R. STILWILL, Denver, suggested that the patient was anemic and should receive iron.

Interstitial Keratitis.

W. H. CRISP, Denver, presented a negro, aged thirty-six years, who had on November 6 come complaining of inflammatory disturbances in both eyes of five weeks' duration. There had been a general conjunctival redness, with marked photophobia and drooping of the eyelids, but only slight spots of infiltration in the corneas and a suggestion of vascularity extending a very short distance inside the limbus. In the course of a few days the spots of interstitial infiltration increased moderately, and a delicate general haze of the corneas became definitely apparent. A plus three Wassermann test was obtained, and the patient was, therefore put under injections of mercury and 606. The vision with correction had fallen to R. 5/15, L. 5/30.

W. H. CRISP, Secretary

BALTIMORE CITY MEDICAL SOCIETY.

Ophthalmological Section.

November 23, 1922.

Dr. J. W. DOWNEY presiding

Congestions and Inflammations of the Optic Discs.

From the standpoint of the ophthalmologist. Dr. HARRY FRIEDENWALD welcomed the opportunity which this discussion afforded to endeavor to clarify some of the confusion that exists as a result of the indiscriminate use of terms. "Papillitis" and "choked disc" are often used synonymously, and "optic neuritis" is applied to mild types of both. With the ophthalmoscope we can see only the distal end of the optic nerve; the pathologic conditions there seen should be designated as choked disc (or papilledema), if edematous only, and as papillitis, if inflammatory, as suggested by Leber.

He called attention to the appearance and gradual development of choked disc, following the description by Gunn, and adopted by Cushing.

"Stage 1. This shows some hyperemia of the discs with haziness of the upper and lower margins, where they are crossed by the main vessels. This haziness gradually spreads over and obscures the nasal half of the disc, the temporal edge remaining clear. There may be some narrowing of the physiologic cup and the veins are slightly full and sinuous. Visual acuity is not affected.

"Stage 2. The swelling of the papilla, now obscuring the temporal as well as the nasal margin, has become measurable, the physiologic cup is filled in, and there may be an extension of the edema of the surrounding retina. There is an outspoken stasis with tortuosity of the veins. There is apt to be a subjective lowering of acuity.

"Stage 3. There is a further swelling of the papilla, which is now definitely prominent and spreads over a large fundus area. Its margins are lost. Fine striations appear in the edematous retina, particularly between disc and macula. Retinal hemorrhages may occur and venous stasis is marked, the congestion showing itself in the dilated palpebral venules as well as in the eyegrounds. Measured acuity is usually below normal. There is constriction of all fields.

"Stage 4. The papilla becomes more prominent and, losing its reddish color, appears more opaque. Hemorrhages may be more numerous and larger, and exudates similar to those seen in nephritis may be present on the disc or surrounding retina. Many cases, however, particularly those of slow onset, remain free from hemorrhages and exudates. There is new tissue formation, giving a fluffy appearance to the disc. Acuity of vision is considerably lowered. There may be transient amaurotic periods.

"Stage 5. There is a gradually decreasing vascularity of the papilla. Its surface becomes paler than normal and shows the fine, fluffy appearance due

to new tissue formation, the contraction of which tends to produce a subsidence of the measurable swelling. This may disclose the shimmering atrophic disc as thru a mist. The arteries tend to become of smaller caliber and the thickening of their perivascular lymph sheaths is apparent."

Many follow Uhthoff in calling only those cases choked disc in which there is at least two diopters of swelling. Friedenwald contended that any early case in which definite edema can be seen should be so designated, for a swelling of two diopters is quite arbitrary and excludes the early stages.

The diagnosis of "choked disc" depends not only on the ophthalmoscopic appearance, but also upon a functional examination made with care, for it is only in this way that we can differentiate it in some cases from "pseudoneuritis," in others from papillitis. Cases of "pseudoneuritis" often look surprisingly like choked disc, and the usual presence of a high degree of hyperopia, tho it may arouse our suspicion, does not enable us to make the differentiation. Careful mapping out of the blind spot and of the limits of the fields of vision, as well as tests of central vision, are needed. And even then we may still be in doubt and must watch the case and from time to time repeat the examinations, perhaps over a long period, before the diagnosis can be established. Cases of choked discs are on record which had been under observation for two years, without diminution of central vision or contraction of the fields. Hemiopic limitations of the field may be found in choked disc and help us in the localization of the intracranial lesion.

The evidence of pathologic examination has definitely proved the non-inflammatory character of "choked disc." According to Wilbrand and Saenger (Vol. IV. p. 794), 44 cases out of 54 examined showed entire absence of any inflammatory changes. Of the modern theories for the explanation of the edema of the optic disc due to increased intracranial pressure, none satisfy all the conditions met with.

As to the question of *papillitis*, I wish to point out that this condition is usually a part of an optic neuritis, which has extended down to and involved the optic disc. In this condition the essential change is inflammatory and due to various forms of meningitis, to syphilis, tuberculosis and to the influence of various poisons. The ophthalmoscopic changes in typical cases are very different from choked disc, the haziness of the disc appearing early and producing cloudy opacities over and around the vessels, together with rapid loss of disc margins. In most cases, the swelling is not marked, but it may become quite great. In this condition, as in choked disc, the greatest help in diagnosis is afforded by the functional tests which usually show marked disturbances of vision; peripheral, and more often still, central defects of high degree in the fields are present from the beginning.

I leave to others the consideration of the means of differential diagnosis other than the ophthalmic. We must not overlook the fact that there are cases, especially when seen late, where all our means fail, and a definite diagnosis is difficult or impossible.

From the standpoint of the internist.
DR. M. C. PINCOFF (by invitation): I think these cases fall naturally into three groups.

First. Those cases in which the oculist is not consulted, such as those exhibiting classical symptoms of brain tumor with choked discs; and also many cases which are seen in coma, especially those that are seen out of the city in consultation.

Second. Cases showing a moderate swelling of the discs, with indefinite symptoms, should have a very careful eyeground examination by an oculist as well as interpretation of functional tests. The regressive changes in a nervehead should certainly be interpreted by an oculist.

Third. Cases referred by the ophthalmologist should be most carefully studied from his standpoint, especially cases of *papillitis*. An accurate history is of great importance, including syphilis, tuberculosis, chronic poison-

ings, vascular and renal conditions. They should be studied by group medicine. Stereoscopic studies of X-rays of skull are sometimes most helpful. Lumbar puncture is often of help and, altho somewhat dangerous, if surrounded by all precautions is seldom serious. The stylet should be withdrawn very slowly to prevent sudden lowering of pressure and if untoward symptoms develop, reinject normal saline. If all examinations prove negative, should we inject air into the ventricles or what? The ophthalmologist is probably best fitted to judge whether life or vision is threatened.

From the standpoint of the neurologist.
DR. C. M. BYRNES (by invitation) said: I do not feel competent to differentiate between all optic nerve swellings. Some cases showing large intracranial growths at autopsy, show only indefinite eye changes. I often wonder how much importance should be given to eyegrounds. A case in point: White woman with pain in left side of face and anesthesia, no headaches or vomiting. Eyegrounds showed slight but indefinite changes. Blood and spinal fluid Wassermann negative, globulin negative, cell count of sixty-two, upon which it was assumed to be syphilitic and condition cleared up on treatment. I have never seen a syphilitic nervehead which could be taken for choked disc. Gliomas of the brain may be very extensive, with little change either in its function or in the fundal picture. (He then showed slides of brain tumors and choked discs.)

From the standpoint of the surgeon.
DR. WALTER E. DANDY (by invitation) said: We are still struggling among certain difficulties. There are at least two general causes, inflammatory and mechanical. These are best stated as "swelling of the nervehead," and differentiated as to inflammatory or mechanical later.

Under the mechanical, or choked discs, we must consider tumors, hypertension and nephritis. Under inflammatory, or optic neuritis, occur the sinus infections and syphilitic involvements. It requires minute and thoro examination, along every line,

to eliminate all the possibilities. A choked disc is very important as to diagnosis, but of little or no value in localization. In order to produce choked disc, you must have sufficient pressure along the nerve sheath to cause stasis of the vessels. A tumor may at first produce a choked disc, and then later by obstructing the inner ends of the sheath cause less stasis and less choking, even in the presence of increased intracranial pressure.

The sheath is usually open in children, but not so open in adults. A mechanical or inflammatory disc may not always be differentiated by the ophthalmoscope.

Discussion.—DR. A. D. MCCONACHIE said, that there was no question that sinuses did produce optic nerve changes, but if there was any evidence of choking an early decompression was indicated to save sight.

DR. HIRAM WOODS. We should certainly make a careful distinction between choked disc and papillitis. I believe that the direct and consensual reaction of the pupil is as important as choked disc in making a diagnosis.

DR. J. W. DOWNEY spoke of the eye changes in the case mentioned by Dr. Byrnes as being one which could not be differentiated by the ophthalmoscope.

DR. HARRY FRIEDENWALD: There is usually no difficulty in telling choked disc from papillitis, but the unusual ones were especially difficult.

DR. M. C. PINCOFF desired to know how long we should wait in cases of choked disc which gave negative findings.

DR. FRIEDENWALD answering said, if the fields begin to contract and if central vision began to be less acute, then do a decompression.

DR. W. E. DANDY: A neurologist and a neurologic surgeon should make a diagnosis of the presence, or absence, of an intracranial growth in 95% of the cases. If there is an infected sinus, then the burden of proof is upon the one who says it is not from the sinus; if hypertension, the burden of proof upon those who say it is not hypertension; if syphilis, then burden of proof

upon those who say it is not syphilis, etc. It is justifiable to inject air into the ventricles, if vision and fields begin to be lost. Spinal puncture gives little knowledge and is often dangerous.

One should first make a diagnosis as to presence or absence of tumor, then localize and remove it, doing a decompression only in the irremovable cases.

C. A. CLAPP, Secretary.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY.

November 13th, 1922.

DR. E. B. HECKEL, President.

Specific Vascular Descemetitis.

DR. JOS. E. WILLETTTS exhibited the case of Mrs. A., aged 25, married, white; weight, 95 pounds; no children, one miscarriage. No previous eye trouble. Patient first seen July 27, 1922. Eye symptoms were those of an acute conjunctivitis. Conjunctiva injected; lacrimation, with some coryza. Cornea clear. No increased tension. Patient was given cargentos, grs. 15 to oz. 1/2, and told to return in three days. On July 30th, all symptoms were accentuated. There were excessive lacrimation, photophobia, dimness of vision; no conjunctival secretion; anterior chamber deepened; no increased tension; pupils about normal. Epithelial layer and lamellae of the cornea were clear and unaffected.

On the posterior surface of the cornea of the left eye, the membrane of Descemet was covered with long striated erosions, extending from the lower limbus to the upper margin of the pupil. They were in no sense deposits and were not in the lamellae. Their appearance was compared to the marks left on the ground during rain, when the angle worms leave their trail. The center was more or less clean, but the edges were ragged, more opaque and slightly thickened.

Following these, at the extreme lower limbus, posterior to the lamellae of the cornea, there was a wall of minute penicillate capillaries, so dense and so uniform in caliber and length, that their

ending would correspond to a horizontal line. This uniformity was maintained until they reached the median line of the cornea, some two months later. At this period, some of the uniformity was lost, the smaller capillaries fading out while others increased in caliber, extended and began to branch and later to anastomose, so that the uniformity of the horizontal endings was lost. It was unlike anything seen before. A concentric or a fan shaped formation would not be unusual. They could easily have been mistaken for a drop of fresh blood lying in the anterior chamber. I excluded, in my diagnosis, gumma of the ciliary body, because there was no disturbance of contour; parenchymatous keratitis, because the lamellae were in no way involved; iridocyclitis, because there there was no pain or exudate.

I prescribed 1/16 gr. of mercury bichlorid and about 3 1/2 grs. of potassium iodid, t.i.d., and atropin, 2 grs. to the ounce, to be dropped in the eyes t.i.d. On August 4th, condition unchanged, patient was referred to Dr. Ernest Willetts for a Wassermann test, which was reported very strongly positive. X-ray of teeth showed three slight areas of infection. The biniodid of mercury was continued until August 21st. The vascularization, lacrimation and dimness of vision had gradually increased. The pathology was still confined to the membrane of Descemet. There was no exudate in the anterior chamber, no iritis or cyclitis, no disturbance of the lamella, and no pain or increased tension.

Since she had taken internally four grains of bichlorid and about 180 grains of iodid with no improvement, she was referred to Dr. Willetts and was given 5 grams of neoarsphenamin intravenously. Another 6 gram dose was given two days later, a third injection of 6 grams was given two days after this, and a fourth one of 6 grams on August 28th. During these seven days, the biniodid was not given. There was absolutely no improvement perceptible from these injections. She was put back on the 1/16 gr. of bini-

odid, four times daily, until about Sept. 6th, when I left the city, and the patient was cared for by Dr. H. H. Turner.

Dr. Turner can verify the horizontal alignment of the vessels, as it was maintained up to this time and later. There seemed to be some slight clearing of the opacity peripherally at this time. Dr. Turner thought, on account of the excessive lacrimation, that atropin in an ointment base would be better, and prescribed it in that form. He also withdrew the bichlorid and administered four grains of hydrargyrum creta with iodid potassium, 15 grs., t.i.d., increasing 1 gr. a day. On my return Sept. 20th, I found some slight peripheral improvement. I sent the patient to the pathologist for another Wassermann test, report of which came back "Very strongly positive."

On Sept. 23rd, I put her back on 1/16th gr. bichlorid, and atropin in solution, but continued the potassium iodid. I also ordered mercurial inunctions and another injection of 6 grams of neoarsphenamin. She was given another 6 grams on Sept. 26th.

Symptoms of salivation occurred about this time, and the inunctions of mercury were withdrawn. The bichlorid was diminished to one dose per day until symptoms of salivation disappeared. About this time, she also complained of dryness in the throat and the atropin was withdrawn for four days. There was slow, but steady improvement. On Oct. 2nd, she was again given 6 grams of neoarsphenamin intravenously, and another 6 grams on Oct. 7th, making eight injections in all. About this time an eruption began to appear from the prolonged use of iodes, which I did not withdraw, but reduced one drop a day until she was taking 12 drops, and then again increased until she is now taking 23 drops t.i.d. At present, November 9th, the left eye is quiet; she can count fingers at 15 feet. Remains of some of the larger vessels, beginning below the scleral margin at the inferior limbus and extending up over the membrane of Descemet can be plainly seen

In this patient, I believe that vascularization was dependent upon the localized invasion of the spirochetes upon the membrane of Descemet, and was maintained in and confined to the membrane thruout the entire course of the disease. The involvement of the right eye, which began simultaneously with that of the left, has been more severe. While the formation of the vascularization was the same, it was more pronounced, slower to progress and slower in responding to treatment. The opacity was dimmer and just now, on Nov. 9, is beginning to clear peripherally.

When the patient was last seen, there was slightly increased tension, without pain, and the mydriatic was discontinued. She is now taking, in addition to the other treatment, cod liver oil, and later will receive tincture of iron with bichlorid of mercury, which I shall continue after a negative Wassermann. She has taken internally approximately 4 ozs. of iodid of potassium and 26 grs. of mercury bichlorid, which was pushed to the point of salivation; has had 47 grams of neoarsphenamin intravenously, and has had mercurial inunctions in both axillae and both popliteal spaces for two weeks. Notwithstanding this aggressive treatment, report of a Wassermann received this morning (November 13th) is "very strongly positive."

We are familiar with the condition described in the text books as Descemetitis, in which the posterior surface of the cornea is dotted with small opaque bodies generally arranged in pyramidal form. This is in no sense of the word a Descemetitis, but only an edematous condition of the endothelial layer of the membrane. Text book writers persist in calling this condition Descemetitis, when the principal diagnostic sign is admitted to be a deposit of an exudate from an adjacent inflamed organ, primarily the Collin's gland in the ciliary body. Descemet's membrane itself presents no clinical picture or distinctive sign of an individual inflammation. Histologically unlike Bowman's membrane, which is not a membrane but simply a con-

densation of the lamellae of the cornea, which cannot possibly suffer invasion independent of all the corneal structure, the Membrana Descemeti, being a separate membrane, is histologically open to individual attack independent of corneal parenchymatous involvement.

In this patient, I believe that the inflammation originated, was maintained in and confined to the membrane of Descemet, and from conclusions formed from observing its beginning and course, I am classifying it as Descemetitis vasculosa. Just why this patient should have departed from the classical type of ocular inflammation known as interstitial keratitis, so common in specific heredity, I am not prepared to say; and, considering the similarity between Descemet's membrane and the vitreous membrane of the choroid, with which it is continuous thru the ligamentum pectinatum, I am unable to understand, in view of the prolonged violent inflammation, why there was no active involvement of the choroid, ciliary body, iris or lamellae of the cornea.

Discussion.—DR. KREBS thought the case an atypical form of interstitial keratitis, and that the vascularization of the cornea is not in or upon Descemet's membrane. He thought tuberculosis might be a factor in the condition and suggested the diagnostic use of tuberculin.

DR. KOCH thought the case one of interstitial keratitis occurring later in life than usual.

DR. STIEREN believed the vascularization to be not deep in the cornea, but anterior and just beneath Bowman's membrane. He raised the question of the relative therapeutic value in interstitial keratitis of intravenous administration of arsphenamin and bichlorid of mercury given by mouth. He believes in the latter, pushed rapidly to the point of intolerance, and sees no advantage in intravenous medication in this condition.

DR. HECKEL does not give potassium iodid in these cases, but relies on bichlorid of mercury by mouth, a convenient prescription for regulating

the dosage by drops, being hydrargyri chlorid corrosivi, gr. 2, sodi chlorid, grs. 3 to 5, aquae, qs. ad fl. ozs. 3. He thought this case one of parenchymatous keratitis.

DR. KREBS uses syrup of the iodid of iron, in addition to bichlorid of mercury, and has the urine examined frequently as an index of mercury tolerance.

DR. TURNER thinks now that the case is an atypical one of interstitial keratitis. When he first saw the patient for Dr. Willetts, the condition of the cornea looked somewhat like pannus carnosus. The corneal vessels came up from a point well down in the cornea and radiated in arborescent fashion from limbus to limbus.

DR. WILLETTS, in closing, stressed again the horizontal alignment of the vascularization at its inception. Clearing of the corneae has been in sections, the peripheral portions being the first to clear.

Unilateral Proptosis, Abscess of the Frontal Lobe of Brain.

DR. EDWARD A. WEISSER reported the case of J. L., white, male, aged 9, admitted to St. Francis Hospital on Oct. 9, 1922. Three weeks previously, he was hit over the left eye with a good sized stone. Three days later, eye became swollen and painful; later the swelling subsided and the pain became less severe.

On admission to hospital, the child was restless and irritable; mentality was not affected. There was no rigidity, no Kernig. On account of the absence of meningitis, lumbar puncture was thought unnecessary.

Examination of eyes showed right eye to be normal in all respects. Left eye, cornea was clear; pupil 6 mm., reacted slightly to light; markedly proptosed; all extraocular movements were very much limited, more particularly outwardly. On Oct. 14th, in early morning, patient had fifteen convulsive seizures over a period of thirty minutes; consisting of marked spastic, jerky movements of the left arm, nystagmus of each eye, internal rotation of right eye, left eye fixed in

median line, lower extremities apparently unaffected during attack. The attacks lasted from 30 to 60 seconds; during and between attacks patient was unconscious. An exploratory lumbar puncture was made, which showed spinal fluid greatly increased in pressure, but no turbidity; 15 c.c. were withdrawn. Convulsive seizures afterward became increased and involved the lower extremities. Examination of the spinal fluid showed a count of 49 cells, with a preponderance of large mononuclears; globulin content, plus; Wassermann, negative. There was no growth in culture of spinal fluid in 48 hours. White blood count on Oct. 12th, was 9780; on Oct. 14th, 16,250; on Oct. 30th, 61,500.

Patient had frontal headaches frequently, and complained of these chiefly in the morning. On Oct. 29th, complained of frontal headache and pain in neck; no stiffness, Kernig sign quite suggestive. Patient was stuporous and appeared delirious at times. His temperature ran from 100 to 102, gradually rising, and once went to 104. Pulse rate was not in proportion to height of temperature. X-ray of patient's head showed absence of frontal sinuses. Dr. Geo. J. Wright saw patient on Oct. 30th, and suggested the possibility of an abscess in the frontal lobe. On Oct. 31st, Dr. Homer McCready made an exploratory operation of the frontal sinuses, but found nothing. He went thru the skull and found a large abscess, about the size of an orange, in the frontal lobe of the brain, from which one cup of pus was obtained. The eyeball receded, but the patient kept getting worse after operation and died on Nov. 5th.

Penetrating Injury of Eyeball.

DR. J. CLYDE MARKEL reported the case of A. H., colored, aged 51, liveryman, admitted to the hospital on August 8th, 1922, giving a history of having been injured early the same morning while at work in a stable. His statement was that while throwing the harness on a horse, a strap swung around under the horse's neck and struck his left eye. Examination

showed a ruptured globe, a badly lacerated, ragged wound of the cornea, about 1 cm. long, running vertically thru the inner limbus. A large portion of the lacerated iris prolapsed thru the wound and the globe was partially collapsed.

Iris was excised and scleral suture inserted. Tetanus antitoxin was administered. A bad prognosis was given. When seen early next morning, the patient was found to have had a very bad night, with excruciating pain in the eye and head. Panophthalmitis had begun to develop, lids were swollen and edematous, conjunctiva very chemotic, rolling over the cornea sufficiently to hide it. In the afternoon, he consented to enucleation, which was then done under general anesthesia. On opening the globe, the structures were found greatly disorganized, the vitreous was filled with a large blood clot and some pus. In the center of the globe was found a large tough body, which proved to be a piece of leather 9x7x3 mm.

The history given by the patient when he was first seen, was doubted, for it seemed inconceivable that a blow with a strap in the manner described could produce such traumatism. The recovery of the leather proved that the injury had been produced in some other way. Inquiry elsewhere revealed the fact that patient had had some altercation with another employe, and the supposition is that he was struck with the leather cracker of a teamster's whip with sufficient force to break the end off as it struck the eye. This version the victim emphatically denied, and insisted that his original story was correct. He made an uneventful recovery and had an unusual amount of movement in his artificial eye.

In *discussion* the consensus of opinion was that the patient's history was not plausible.

Gumma of Eyelid.

DR. EDWARD B. HECKEL exhibited an adult, male, colored, with a gumma at the junction of the middle and inner third of the left upper eyelid, who pre-

sented on Sept. 13, 1922. Blood Wassermann was negative, which Dr. Heckel stated in his experience is not unusual in gummatous conditions. The lesion is now broken down and is responding to mercury, which is being administered in the form of 1/12 gr. doses of bichlorid by the mouth.

In *discussion*, Dr. STIEREN stated that he has seen the primary lesion of syphilis on the lid, but never a gumma. He had a case of gumma of the lacrimal sac; it did not break down.

DR. WEISSER saw a gumma of the eyelid 10 cm. in diameter, with punched out margin and an indurated area around. It could not be seen unless the lid was everted.

GEORGE H. SHUMAN, M. D.
Secretary.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Section on Ophthalmology.

November 16, 1922.

DR. MCCLUNEY RADCLIFFE, Chairman.

Sarcoma of Lid.

DR. CHARLES E. G. SHANNON exhibited a case of primary sarcoma of the lid in a woman, 79 years of age. Family and personal history negative. Physical examination negative. She first noticed a small swelling at inner third upper lid, O. D., about two years ago. This swelling slowly increased in size. Six months ago the tumor, presumably a chalazion, was incised, following which the growth enlarged very rapidly until it assumed its present appearance.

The skin surface of the lid is distorted and of a dark red color, in which dilated veins are observed. On eversion of the lid, a large irregularly shaped, broadly pedunculated mass is noted in the outer two-thirds, while the inner third is occupied by a fairly large, resistant swelling. The surface of the tumor is granulated and tends to bleed on manipulation, and is bathed with mucopurulent material. The scleral conjunctiva shows no invasion of the growth. The cornea is maculated, with reduction of vision to 10/200.

Dr. Crawford, Pathologist of Jefferson Hospital, reports a mixed cell sarcoma. In view of the history of the case, a diagnosis of primary sarcoma of the lid seems warranted. While excision of the growth may ultimately be necessary, Dr. Hansell has advised X-ray treatment every four weeks.

Gun Shot Wound, with Fragment of Finger in Globe.

DR. CHAPIN CARPENTER (by invitation) reported an unusual result of a gun shot wound of the eye. A hunter laid his gun on a fence, from whence it was dislodged and discharged, with the full force of the charge passing thru the fingers of the left hand, about a foot and a half from the man's face. An extensive wound of the globe resulted, and the patient was advised to have immediate enucleation. This was refused for twenty-four hours, at which time the anterior chamber had cleared sufficiently of the blood to show a foreign substance protruding into the anterior chamber. Enucleation was then done, and in the globe was found a piece of bone from the finger of the patient's left hand, 15x8 mm. X-ray picture had been made without the foreign body casting any visible shadow. The bone was lodged in the vitreous and protruded into the anterior chamber, and had dislocated and shattered the lens. Its origin was from the first phalanx of the index finger.

In spite of the extensive injury the eyeball was not collapsed, and the patient could see light for a few hours after the injury. The negative X-ray report, together with these features, made the case more than of usual interest.

Complete Discission for Traumatic Cataract.

DR. WM. ZENTMAYER showed a patient on whom he had performed discission of the lens for traumatic cataract, after the manner suggested by Dr. Ziegler. No difficulty was experienced in making a V shaped thru and thru incision in the lens. The upper portion of the triangular lens mass tilted forward and some of the corti-

cal matter dropped into the bottom of the anterior chamber. The absorption of the lens was rapid, in comparison to that following the ordinary method of discission, so that today, nine days after the operation, the lens has almost entirely disappeared. There was little reaction until today, when a hemorrhage appeared in the anterior part of the vitreous.

Discussion.—DR. S. LEWIS ZIEGLER suggested, that in making a peripheral incision of the capsule or lens with the knife needle, the edge of the ciliary processes might protrude farther than usual and be punctured, causing a sharp cyclitis, with or without plastic exudate. An experience of that kind had caused him to make a slight change in his technic in order to obviate this. Instead of poising the knife point over the capsule and making a dart like thrust, he now lays his knife needle on the tissue, presses it down toward the optic disc and then makes the dart like thrust, thus escaping the danger of wounding the ciliary body. Of course, the pouring out of the traumatic cortex may have originated the slight exudate in this case. He would suggest the use of ice pads, leech and calomel, together with hypodermic injection of mixed infection phylacogen, 2 cc., on alternate days.

Myxosarcoma Involving Orbit, Electrocoagulation.

DR. EDWIN MILLER presented for Dr. Luther C. Peter, a boy, aged 6, seen at the Polyclinic Hospital, June 21, 1922, with the appearance of an *abscess* of the lower and inner aspect of the left orbit, of five weeks' duration. The eye was pushed up and out, but was not involved. The X-rays showed frontals poorly developed but clear, as were all other sinuses. There was an unerupted tooth in left canine area, in an unusually high position. This the roentgenologist thought might be the cause of the swelling under the orbit. Physical examination by the Children's Department was negative. Von Pirquet and blood Wassermann negative. Leucocyte count, 5000.

One June 23d, under ether, the area which appeared to be pointing was

freely opened, but no pus was obtained. The orbit was carefully explored with a groove director without results. A rubber drain was inserted. Feeling that a pus pocket might have been overlooked, the wound was reopened and enlarged five days later, and the entire orbit explored. Dr. Schatz, from Dr. Butler's service, was called in, and he removed the inferior turbinate and the anterior end of the middle turbinate and curetted out the ethmoids, which were found to be necrosed. A free opening was made from the orbit to the nose, and a drain inserted. The material from this area in the orbit was examined, and reported as granulation tissue.

After the second operation the proptosis markedly increased, the eye pushed up and out, the disc became blurred and swollen, the vitreous hazy and the cornea steamy. Dr. Wm. T. Shoemaker saw the case in consultation, and a tentative diagnosis of sarcoma was made. Leucocyte count, 14,000.

Under ether anesthesia the contents of the orbit were eviscerated by Dr. Wm. L. Clark by the electrocoagulation method. The orbit was dressed with dichloramin T, but as this was irritating, genetian violet was substituted. The child made an uninterrupted recovery. Parts of the upper lid were not destroyed. In October the remaining lid was split, the cartilage was removed, and the skin used to line the orbit, leaving a smooth, clean surface. There has been no sign of recurrence. Examination of the mass containing the eyeball was obtained from two pathologists, one reporting small round cell sarcoma, the other myxosarcoma.

Herpes Zoster Ophthalmicus.

DR. WM. J. CREIGHTON reported of a middle aged, well nourished, apparently healthy white male. There was no history of any definite cause, such as exposure to cold, dampness, or the taking of arsenic. He had a left sided intercostal herpes five years before.

There was intense darting neuralgic pain in the left eye and the region of

the left eyebrow, forehead over to the median line, up the left side of the scalp and down the left side of the nose from the root to the tip. There was an eruption of numerous vesicles, of variable size ranging from a pin head to that of a pea. These were situated on inflammatory bases and were scattered over the above areas, more or less in chain formation. There was redness and edema of the upper lid, with a chain of vesicles most marked horizontally just above the lid margin. Swelling and injection of bulbar conjunctiva, with excessive lacrimation and several small hemorrhagic areas. The cornea showed diminished sensation as compared with the right eye, and there were four or five superficial erosions or ulcers and a grayish infiltrate in the center occupying the superficial and deeper layers; these areas stained readily with fluorescein. There was a mild iritis, but the pupil readily dilated to atropin. The ophthalmoscopic examination, aside from the corneal involvement, was negative. The tension was normal.

As to general examination, the heart and lungs were normal, blood pressure, 140 systolic, 85 diastolic; urine negative, except for a small trace of indican; Wassermann negative; blood picture negative, the hemoglobin being 85%, and no malarial parasites were found in either the fresh or stained smears. Nose and throat examination was negative. X-ray of skull and sinuses negative, of the teeth showed an abscess at root of second molar lower right.

As to the treatment: Locally, for the skin condition, a paste of zinc and starch was used. Hot magnesium sulphat stupes, holocain and atropin, and iodoform ointment and a bandage were used early in the eye, later atropin and dionin. Generally, purgation, quinin and phenacetin were given early, but the pain was so severe that morphin had to be given. As the pain lessened, a prescription containing zinc phos., strychnin and quinin was employed.

At the present time the patient presents numerous scars and pits, most

marked on the forehead and scalp, where there is also some loss of hair. The cornea still shows the central opacity which is gradually clearing and is somewhat anesthetic. The irritation, both conjunctival and ciliary, is very much less. The tension is now below normal.

Discussion.—DR. JOHN T. CARPENTER referred to the modern view, that herpes zoster ophthalmicus was to be regarded as an infectious specific disease, possibly showing particular selective action on the Gasserian ganglion. In addition to the local measures used in the present case, he had recently had a remarkably rapid and favorable termination in an unusually severe case of herpes zoster from the administration of large doses of quinin, in accordance with the old time clinical practice. The prompt cure in this case was not due to any malarial toxemia, which was absent as in Dr. Creighton's patient.

DR. WM. ZENTMAYER said that in herpes zoster ophthalmicus there were two complications which were of interest and which appeared to be absent in Dr. Creighton's case. In some of these cases, after the efflorescence has subsided a paralysis of one of the ocular muscles develops, the third nerve most commonly and the fourth rarely. Several views have been advanced to explain this. Head and Campbell found hemorrhages in the Gasserian ganglion, while another observer found thrombi in the ocular muscles.

The second complication is glaucoma, and this has been observed frequently enough to have been the subject of a report by Weeks, of New York. Just the opposite condition (hypotony) may occur. Finally, there is some diagnostic interest in that the corneal lesion often bears a morphologic resemblance to disciform keratitis. Of course, it has no relation to this disease, other than that they may both have a neuropathic origin.

DR. WILLIAM G. SPILLER said, in some of the cases of herpes zoster ophthalmicus the sympathetic fibers to the eye are affected, altho they were not paralyzed in the case presented this evening. It is probable that these

fibers reach the eye from the Gasserian ganglion, thru the first division of the fifth nerve. Dr. Dorrance has reported that when he injected the Gasserian ganglion with alcohol, he observed flushing of the ophthalmic nerve distribution.

Nearly thirty years ago Dr. Spiller had the opportunity to determine, that in a case of Pott's disease a herpes zoster in the distribution of the second thoracic nerve was associated with miliary tubercles over the spinal ganglion of this nerve, and the first thoracic spinal ganglion, which had been removed by mistake, was normal. Disease of the spinal ganglion, or of the Gasserian ganglion, in the case of the fifth nerve, may be the cause of herpes zoster.

DR. S. LEWIS ZIEGLER stated that he had once suffered from a mild attack of herpes of the left eyebrow, after exposure to a nocturnal draft of cold air, followed by a day's ride in an European train with exposure to similar drafts. There was also a marked swelling of the nasal tissue but without discharge. The pain was of a dull boring character. The cornea was not involved. The attack promptly yielded to the administration of hyoscin, morphin and pilocarpin together with intranasal applications.

Ocular Phases of Little's Disease.

DR. WM. CAMPBELL POSEY said: in 1861, Little, a British orthopedist, was the first to call attention to the condition not infrequently observed in consequence of premature birth, mechanical injuries during parturition to the fetal head, etc., in consequence of which convulsions are excited after birth and are succeeded by a determinate affection of the limbs of the child. Little designated this disease as "spastic rigidity of the limbs of new born children," altho it is now usually designated as "Little's Disease."

Dr. Posey gave a resumé of the neurologic aspects of the disease, calling attention to the early involvement of the muscular system, chiefly manifesting itself by the difficulty of separating the thighs, the lower limbs being held stiffly, the thighs rotated inwards,

and so strongly adducted that the knees touch each other and in walking rub against each other. The arms are involved in many cases, but in others completely spared. In pure cases of spastic paresis of the lower or of all four extremities, Oppenheim points out that the symptoms must correspond completely with those of spastic spinal paralysis and that there must be no indication of nondevelopment or incomplete development or degeneration of the spinal pyramidal tracts. In such cases, other symptoms are generally present, which reveal the cerebral origin of the disease. Among these are ocular symptoms, disturbance in speech and sometimes difficulty in swallowing, convulsions and epilepsy. Strabismus is the most constant of the ocular symptoms. Feer found it in 30 per cent of the cases which were without cerebral complications, and in 40 per cent where such was the case. Altho thought in most cases to be merely a concomitant squint, due to errors of refraction, Dr. Posey stated that a study of the literature showed marked degrees of ametropia in so few cases that we must assume that the deviations are due in most instances to innervational disturbances produced by the disease, and that they vary in degree and kind according to the location and extent of the cerebral lesion. Spasticity of the eye muscles, such as occurs in the extremities, is rarely present. Nystagmus occurs next in relative frequency. Paralysis of the eye muscles and optic nerve atrophy are very rare.

CASE 1, was that of a young man presenting all the classic symptoms of Little's disease, with convergent strabismus. The disease had resulted from a very prolonged labor, the child being born in a condition of asphyxia pallida. Spasticity of the eye muscles was absent. Advancement of both externi under ether corrected the deformity.

CASE 2 was that of a girl twin, who presented the rare anomaly of anotropia, both eyes rotating upward under cover. Convulsions appeared after the first examination of the eyes, which was made when the

child was about five years old. In common with her sister, the patient had a somewhat spastic condition of the muscles of the lower part of the face and a peculiar manner of speaking. Dr. Spiller studied this case and made the diagnosis of Little's disease.

He rendered a similar diagnosis in CASE 3, that of a young man whom Dr. Posey had followed since infancy, with nystagmic movement of both eyeballs, most marked in lateral excursions, and slight tremor of the head. The ocular conditions had resulted from a prolonged labor and were attended with other signs of faulty development.

Discussion.—DR. WM. G. SPILLER said, altho Little expressed his views clearly in a paper in 1861 and had indeed made them known in 1853, we are still in some uncertainty as to what we shall include under the term Little's Disease. Little included all the conditions which, occurring before birth, at the time of birth, or shortly after birth, were capable of producing spastic paralysis of the limbs. He included cases of premature birth, cases resulting from asphyxiation during birth, cases from injury to the head during birth or shortly after, cases with mental impairment even idiocy, cases with convulsions, etc. Brissaud attempted to exclude the cases with convulsions or disturbance of intellect, but this is not what Little intended to do. Van Gehuchten even desired to limit the term Little's disease to cases of premature birth.

The brain of a newborn child at full term is soft and imperfectly medullated, and when slight trauma occurs, it is capable of producing grave disturbance. Asphyxiation may arrest the development of cortical nerve cells, and it is surprising that it does not more often cause optic nerve atrophy. There is a patient in the Philadelphia Hospital, who in 1903 had a severe loss of blood, so that his red cell count was little over one million and his hemoglobin 16 per cent. Shortly after the hemorrhage occurred, he began to lose his sight and has had optic atrophy ever since. After sight was lost he became paralyzed in the lower limbs, and

three months later, paralyzed in the upper limbs. He has regained the power of his limbs. In this case the effect of disturbed circulation on the optic nerves was clearly shown.

When a child is born prematurely, the nerve fibers do not become properly medullated after birth and incoordination results. He believed that the strabismus and nystagmus frequently seen in children born prematurely is to be attributed to incoordination produced in this way, as the cortex has very imperfect connection with the nuclei of the ocular nerves, and incoordination must result.

Spastic diplegia may be associated with arrest in the development of some part of the brain in addition to that of the motor fibers. There might be a failure of development of the visual system, as in a case reported by him many years ago. When lesions have developed in various parts of the cortex, as from trauma, different forms of visual disturbance are possible, provided the visual system is implicated. In some cases of spastic diplegia the pons seems to be especially affected, as noted chiefly by Oppenheim, and in these cases paralysis of nerves to ocular muscles might readily occur.

It is a question whether it would not be better to drop the term of Little's disease and speak of *congenital spastic diplegia*. This condition has been known to exist from high cervical lesions. The term Little's disease owes its popularity especially to French writers.

Toxic Amblyopia with Retinal Hemorrhage.

DR. WILLIAM ZENTMAYER presented J. H., white, fifty-four, laborer, examined at Wills Hospital Nov. 8, 1922, complaining of failing vision, the condition having grown steadily worse during the previous two weeks. Has been a heavy drinker for thirty-six years, and for the past four months has drunk from one to one and a half pints of whiskey, denaturated alcohol, and gin daily. Has smoked and chewed tobacco, on an average of six ounces a week, for forty years. Vision O. D., 2/LX; O. S. 1/LX.

Aside from arcus senilis, the external examination of the eye is negative.

Pupils measure 3.5 mm., and react normally to light and convergence.

O. D., media clear. Margins of disc indistinct, temporal half shows atrophic pallor. Veins are irregular in caliber. Inferior temporal vein is large and tortuous. Arteries are too bright.

O. S., media, disc and vessels as in O. D. About 4 d. d. diameter from the disc along the superior temporal vessels there is a pale hemorrhage, about 1/2 d. d. in size and in part overlaying the vein.

Visual fields, O. D., form field normal. Color field somewhat contracted. Central scotoma 35°x25° extending 20° toward the blind spot and 15° nasalward. O. S. Form field shows contraction, especially on nasal side. Color field somewhat contracted. Central scotoma 30°x25° extending equidistant on each side of fixation.

In both eyes the scotoma could be detected with 1.7° white test object. The scotoma indicated is mapped with 1° red test object. There is a central scotoma for a blue stimulus of small visual angle, but not for blue of 1°. Color field limits had to be mapped with 2° test object, altho 1° was sufficient for white.

Physical examination: Heart sounds normal. Radials firm but not distinctly sclerosed. Pulse 84. Teeth in good condition except for pyorrhea and two stumps. Patellar reflex, Romberg, and gait normal. Slight tremor of hands when arms are extended. Treatment has consisted in sweats, laxatives, nitroglycerin and strychnin. There has been little improvement in vision. The retinal hemorrhage has all but disappeared.

The history of this case suggests that it was one of ethyl methyl alcohol tobacco amblyopia. Interest attaches to the presence of retinal hemorrhages in amblyopia as to the possible bearing of arteriosclerosis in determining the toxic effect of these agents upon the retina and optic nerve.

Reviewing the cases reported, the observations of Scalinci and Kruger as to the frequency with which instances of arteriosclerosis are found in toxic retrobulbar neuritis, together with the histologic observations of

Sachs as to the presence of a proliferating endophlebitis, a periphlebitis and a choking of the peripheral capillaries with small extravasations from them, lend support to Scalinci's view that arteriosclerosis is the factor determining whether these agents will effect the optic nerve and retina, and also explains individual susceptibility.

after removal of teeth. This case will be reported in full in an early number of the A. J. O.

Rupture of the Sclera.

DR. AARON BRAV read the report of a case published in this journal, see p. 38.

CHARLES R. HEED, M.D.
Clerk.

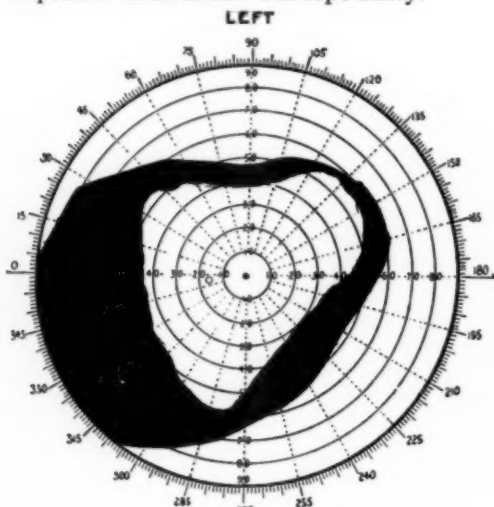


Fig. 1.

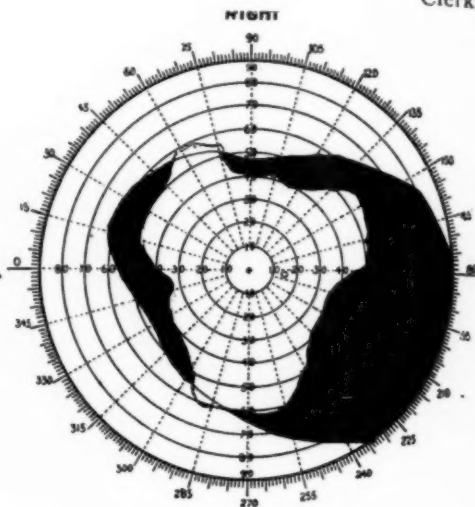


Fig. 2.

Figs. 1 and 2. Fields of Mrs. J. M. B., Oct. 12, 1922. Taken by daylight with white test object 1 cm. in diameter.

Discussion.—DR. WILLIAM CAMPBELL POSEY said that altho very pronounced cases of toxic amblyopia were uncommon, those of lesser degree, in consequence of which vision was but slightly reduced, were comparatively common. Such were the cases where in addition to the toxic agent, there was a general arterial sclerosis and faulty elimination, from defective renal or intestinal action. In addition to the torpor retinae present in such cases, the ciliary muscles seemed to him to be implicated also, as so many of his cases of this nature exhibited such frequent changes in spherocylindrical combinations and axes until the toxic source had been removed by suitable measures.

Papillitis from Focal Infection.

DR. L. F. APPLEMAN reported a striking case of impairment of sight, progressive for years, and recovery

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

November 20, 1922.

DR. M. M. CULLOM, President.

Scleral Ectasia.

DR. HILLIARD WOOD exhibited Mrs. J. M. B., aet 24, first seen on September 5, 1922, giving the following history: Right eye; no history or trouble. Sclerotic slightly bluish above. Left eye: Three or four years ago eye slightly burned by cigar ashes; no special trouble at that time. Two years ago noticed growth in upper portion of eyeball. This growth has since gradually increased in size; is not painful; no discharge; but eye frequently becomes injected, red, watery. At such times growth seems larger, than in the intervals between the congestive attacks. No impairment of vision. Was treated several years ago for pyorrhea. Had tonsillectomy two months ago.

Examination shows vision each eye 20/20; accepts no lenses. Right eye: Extraocular muscles, lids, conjunctiva, cornea, iris, lens, pupil and fundus present no pathology. No evidence of tumor, either outside or inside of the eye. Left eye: Extraocular muscles and lacrimal apparatus normal. When the upper lid is raised and the eye

the ocular conjunctiva and sclera, corresponding to the upper portion of sclera, and extending from 3 mm. behind the corneoscleral junction, and well back to the equator. Lower portion of sclera presents nothing abnormal.

Cornea:—Central and lower portions appear normal, but above, to the inner

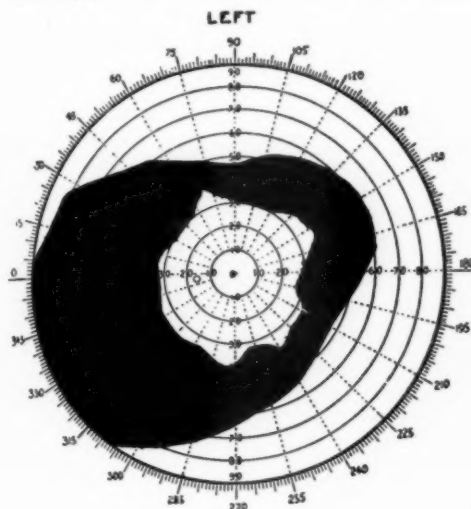


Fig. 3.

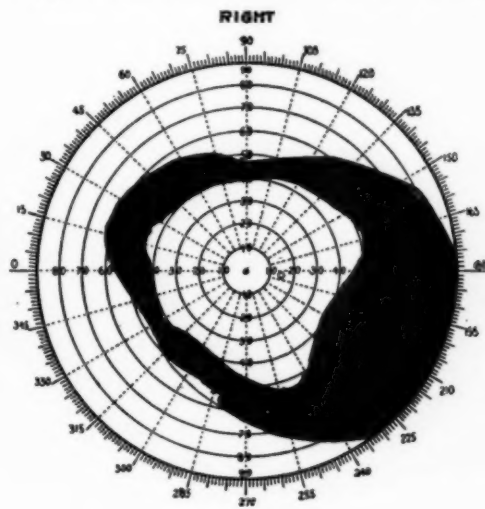


Fig. 4.

Figs. 3 and 4. Fields of Mrs. J. M. B., November 6, 1922, taken by daylight with white test object 1 cm. in diameter.

turned down, there is an enlargement covering the upper half of the sclera, extending from nasal side upwards, downwards and outwards to the temporal side of the eyeball; beginning 3 or 4 mm. above the corneoscleral junction and extending upwards to somewhat above the equator of the eye. This enlargement is sessile, has the appearance of fat, between the ocular conjunctiva and sclera; slightly yellowish in color; moderate enlargement of vessels; is not tender to the touch; does not fluctuate; seems fairly firm; is adherent to the sclera. Conjunctiva covering it is more closely attached to it than the ocular conjunctiva normally is to the sclera; conjunctiva is not dermoid in character. The enlargement is not uniform in size, but greatest in the inner upper portion corresponding to 10 o'clock, and over the outer portion corresponding to 2 o'clock. At first appearance it resembles a ridge of adipose tissue between

or nasal side, there is a superficial crescentic shaped opacity, commencing as a thin margin at 8 o'clock, gradually broadening as it passes 12 o'clock, where it is about 3 mm. broad, and thinning out down to 3 o'clock as a crescent. This opacity of the cornea is dimly white, being whitest at the lower concave margin, blood vessels passing from the ocular conjunctiva on to it, somewhat resembling a pannus, which it is not. The opacity is apparently confined to the epithelial layers of the cornea. There appears to be no corneal irritation from it. Aqueous chamber, iris, pupillary reaction and lens normal. Ophthalmoscopic examination shows fundus normal. Transillumination over tumor produces no shadow.

The tentative diagnosis was subconjunctival lipoma. Against this diagnosis could be mentioned: (1) The periodical attacks of inflammation; (2) the involvement of the corneal

epithelium in the form of a crescent; (3) the number of enlarged conjunctival vessels which seem to supply the growth with blood. Nose, antra, frontal sinuses, nasopharynx, pharynx seem normal. Good result from tonsillectomy. Urinalysis negative. Wassermann negative. Advised removal of portion of tumor for microscopic examination.

Treatment.—Left eye, operation under cocain anesthesia. Upper lid being well retracted with Desmarres' lid elevator, conjunctival incision 1 cm. long made thru ocular conjunctiva, between superior and external recti muscles, incision being about 6 mm. from corneal limbus and concentric with it. Underneath the ocular conjunctiva was found no fat, no tumor of any description, but a bulging sclera. Sclera was exposed for a small space and demonstrated to be sclera. Conjunctival incision closed with three black silk sutures; eye dressed. From the above it appears that the bulging is an ectasia of the sclera in the upper zone.

Oct. 12: R. 20/25 +0.50 c. ax. 90° = 20/20-1. L. 20/25 +0.25 c. ax. 90° = 20/20. Each eye J. No. 1 at 15 inches. R. Tension = 28 mm. hg. L. = 24 mm. For fields see chart. R. sol. eserine and pilocarpin.

Nov. 6: Patient complains of dull pressure pain about each eye, especially the left. Pupils contracted from eserine. Vision same as above. Tension each eye 25 mm. hg. while patient is using eserine. For fields see chart. Advised leaving off eserine for 2 days and then return.

Nov. 8: R. Tension = 32 mm. L. = 28 mm. hg. Referred to Dr. M. M. Cullom for consultation. Dr. Cullom does not know to what the scleral ectasia is due, but thinks corneoscleral trephining might be of benefit.

In presenting this case, Dr. Wood stated that he was very much in doubt as to the cause of the condition and as to what should be done to stop it. In his opinion the eye is doomed unless it is stopped. It is an open question in his mind whether the condition is due to increased intraocular pressure; or whether the patient has any in-

crease; and if so, whether any of the various operations for the reduction of increased pressure would be in order.

Central Retinitis.

DR. WOOD exhibited L. M., aet. 13, female, first seen Sept. 19, 1922, with the following history: In 1914 had measles; 1918 had influenza; 1921 had malaria, chills and fever. Vision of each eye has been failing for three, four or five years, but more rapidly for past 12 months. Occasional sore throat. Has made a grade in school each year, being now in the 5th grade. One maternal uncle believed to have died from tuberculosis. R. and L. Vision = 20/200. Accepts no lens.

Right eye: Pupil dilated with scopolamin. No pathology found in front portion of eye. Fundus best seen without a lens, by direct ophthalmoscopic examination. Optic disc and retinal circulation appear normal. In the Y. S. region there are many pale, buff colored retinal maculae constituting a dappled appearance over an area twice as big as the optic disc. These maculae are not arranged in any definite order, but seem uniformly distributed. In the lower portion of this dappled area is a small area of dark pigment in a thin layer. No hemorrhages. No other noticeable pathology about fundus. Peripheral veins of retina appear normal.

Left eye: Pupil dilated with scopolamin. Front portion of eye shows no pathology. Optic disc best seen by direct ophthalmoscopic examination, without a lens. Disc and retinal circulation present no pathology. In the Y. S. region there is the same dappled appearance, with deposit of black pigment in lower portion of the dappled area, condition being practically identical in the two eyes. Diagnosis: Bilateral central retinitis. Nose and paranasal sinuses seem normal. Faucial tonsils septic, Wassermann negative. Test for malaria negative. Urine: slightly cloudy; yellow; 1023; acid; albumin plus two; no sugar; no casts; no pus; moderate amount red blood corpuscles.

Sept. 22: Removed faucial and third tonsils.

Sept. 29: R. and L. Vision = 20/200. Accepts no lens. Urin shows no albumin. Throat wounds healing nicely.

Oct. 3: Vision and fundi same as above. No albuminuria. R. mixed treatment.

Oct. 11: Temperature normal. Urinalysis negative. Antra and frontal sinuses transilluminate perfectly. No

nate shows some congestion. Under cocain adrenalin anesthesia, using a strabismus hook, ethmoid cells each side were broken down to a moderate extent. No definite discharge of pus noted.

Nov. 17: Urinalysis shows no albumin; no sugar; microscopic examination negative. Test for malaria negative.



Fig. 5. Ocular fundus M. H., R. E., showing intraocular tumor by direct ophthalmoscopic examination.

evidence of Hutchinson's teeth. Pathology in fundus each eye remains same.

Oct. 21: Patient was placed in St. Thomas Hospital on Oct. 16th and given tuberculin. After three injections, patient showed no febrile or other reaction, either local or general. No change in vision or eye grounds.

Nov. 3: Urinalysis negative. Consultation with Dr. E. B. Cayce, who advised bilateral middle turbinectomy.

Nov. 7: Vision same as above. Moderate amount of pus found in attic each side of nose. Each middle turbi-

Melanosarcoma.

DR. WOOD reported the case of Miss M. H., aet 36, who first consulted him on March 24, 1922, giving the following history: Recurrent headache for years. Wears glasses. Feb. 14, 1922, had severe headache, followed by considerable impairment of vision in right eye. Right eye has had atropin solution twice daily for one week. R. Vision = 20/100; L. 20/20.

Right eye: Lids, conjunctiva, cornea, aqueous chamber normal. Pupil dilated to maximum with atropin; dilates circularly and normally; no

synechiae; no deformity of iris; no displacement or retraction. Lens shows no pathology. Examination with focal light and with the ophthalmoscope shows dark mass, commencing at the ciliary region and extending backward apparently well beyond the equator. Mass is smooth, not lobulated or corrugated; extends apparently about

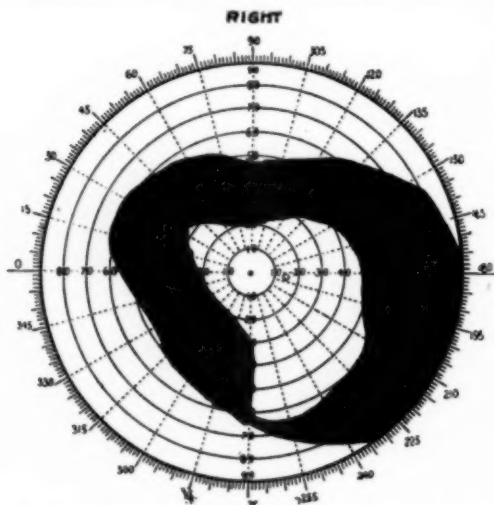


Fig. 6. Field of vision of right eye M.H., showing limitation from intraocular sarcoma.

two-thirds of the way from the sclera to the anteroposterior axis of the eye. Mass is dark chocolate in color, not wavy, is fixed in position, moves with the eyeball, but without fluctuation. No large vessels visible in it. It appears to be a melanotic tumor growing from the uveal coat, displacing the retina inwards. The retina about the optic disc and for some distance forward in all directions seems normal, but towards the nasal and inferior quadrant the retina is displaced towards its ciliary termination, the vessels of the retina being seen best in the central portion without a lens, and in the anterior portion with a +7. Optic nerve presents no special pathology. Tension = 23 mm. Hg. For field see chart.

Transillumination gives normal reflex in left eye and for all parts of the right eye, except when the transilluminator is placed over the tumor, when there is a total abolition of light reflex.

Left eye shows no pathology.

Diagnosis: Melanosarcoma. Advised enucleation. Patient referred to Dr. M. M. Cullom and Dr. E. B. Cayce for consultation. Both agree that the tumor is probably melanosarcoma and advise enucleation.

Operation under ether. Enucleated right eyeball and inserted glass sphere in Tenon's capsule. After operation right eye bisected with a sagittal incision, extending from the center of the cornea to the center of the optic disc, in the meridian of one to seven o'clock. Upper half of eye showed tumor located in the upper and outer quadrant, extending from the front



Fig. 7. Melanosarcoma of choroid. Eyeball opened and everted showing tumor.

area of the ciliary processes, backward to the equator. Tumor was covered on its front margin by brown ciliary process; and was covered back of that by grey retina. It was approximately 1/2" anteroposteriorly and vertically, and 1/4" transversely. Retina was detached in several places and overlay the tumor. Laboratory report from St. Thomas Hospital confirms diagnosis of melanosarcoma.

Discussion.—DR. EUGENE ORR asked whether a section of the nerve had been made, and if so, whether the melanosarcoma had extended into the nerve.

DR. ROBERT SULLIVAN inquired whether there was any objection to the implantation of a glass ball in a socket where sarcoma was known to have existed.

DR. HERSCHEL EZELL wished to know in what cases an enucleation of the ball, and in what cases an exenteration of the orbit should be done.

DR. WOOD said that he did not know whether the nerve was involved or not in this case; as there was no increased tension, the tension being 23 mm. Hg., and as the history was recent, the earliest history dating back only two or three weeks, he had hoped it was still intraocular. Believing this to be true, a glass ball was implanted. Whether the glass ball itself would favor a return in loco, he did not know. If there were infiltration of the orbit, the trouble would probably develop regardless of the glass sphere. Dr. Wood recalled a case in which a good doctor did an enucleation for a malignant growth of the eye, and would not permit the patient to wear an artificial eye because of a possible irritation and of the development and return in loco of the malignancy. He would advise an exenteration of the orbit whenever there is any evidence of extension beyond the ball itself.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

NOVEMBER 20, 1922.

Vice President, DR. FRANK BRAWLEY,
in the Chair.

Immune Reactions of Uveal Pigment.

DR. ALAN C. WOODS, of Baltimore, Maryland, read a paper on "The Immune Reactions of Uveal Pigments and Their Clinical Significance."

Immune Reactions of Lens.

DR. LUDVIG HEKTOEN of the John McCormick Institute for Infectious Diseases, Chicago, presented a further report on his research work on the immune reactions of the crystalline lens, which is published in this JOURNAL. See p. 276.

Discussion.—DR. ROBERT VON DER HEYDT said, that it was with great interest he heard Dr. Hektoen's remarks about the difference in the biologic behavior of the fetal lens compared to the whole adult lens substance. In view of the fact that we now find such a great pathologic difference in the behavior of the lens cortex compared

to the embryonic nucleus, which is the lens at birth, and also in view of the anatomic contrast, might there not be quite a difference in the biologic behavior and the relation of the cortex material, compared to the nuclear material of healthy or cataractous lenses? This material could be obtained by macerating the lens, thus separating the cortex from the nucleus.

Another question he would like to ask is this: If we operate on one eye for cataract and leave some of the cortex in the eye, as was often done, could the left in cortex hasten or inhibit the progression of cataract development in the other eye?

This was something ophthalmologists may in time be able to formulate an opinion on, and he thought it might be interesting to know whether Dr. Hektoen thinks it would have such an effect.

DR. OLIVER TYDINGS said he would like to ask one question from a purely clinical standpoint. When an eye retained a certain amount of inflammation for a time and was then lost, what effect would that eye have upon the development of sympathetic trouble in the other eye in after years? He would like to know whether any observations had been made along that line?

DR. HEKTOEN, in closing the discussion, and in answer to Dr. Von der Heydt stated: that in cataract the cortex contained more of alpha crystallin than beta crystallin. As to the possible effects of leaving some of the cortex of the lens in the eye, that is, as to the influence this might have on the patient in addition to its local irritating action, nothing definite could be said at this time. In the rabbit it is extremely difficult, except under special conditions, to obtain any lens precipitin by injecting rabbit lens, but whether the analogous condition obtains in man is not known.

In answer to a question by Dr. Woods, he said that so far his work had been limited to precipitin reactions.

ROBERT VON DER HEYDT,
Corresponding Secretary.

STANDARDS FOR OUT-PATIENT SERVICE IN OPHTHALMOLOGY.

Report of the Executive Committee of the Section on Ophthalmology of the Associated Out-Patient Clinics of New York City. Walter E. Lambert, M.D., Chairman, Edgar S. Thomson, M.D., Vice-Chairman; Conrad Berens, Jr., M.D., Secretary. Executive Committee: Ellice Alger, M.D., Isaac Hartshorne, M.D., P. Chalmers Jameson, M.D., H. H. Tyson, M.D., J. M. Wheeler, M.D., Julius Wolff, M.D., Michael M. Davis, Jr., Executive Secretary, A. O. P. C., Gertrude E. Sturges, M.D., Assistant Secretary, 15 West 43rd Street, New York City.

The out-patient departments of the leading hospitals of New York City, with a number of dispensaries unattached to hospitals, organized in 1912 the Associated Out-Patient Clinics of New York City, for the purpose of advancing the standards and methods of out-patient work, and coordinating the many existing dispensaries and out-patient clinics of the City. After an enforced lapse during the war, the organization recently resumed activities.

The Ophthalmological Section of the Associated Out-Patient Clinics, one of the professional committees thru which the work of the Association is carried out, recently conducted a series of studies of eye clinics in New York City, in order to have a basis for making recommendations for the improvement of the work of these special clinics. These studies included surveys of representative New York institutions, with special reference to professional methods, equipment, records, teaching and research, and admission procedure, fee systems, and the provision of glasses, and were made by Conrad Berens, Jr., M.D., assisted by the staff of the Associated Out-Patient Clinics. A summary of the conditions found is presented herewith, along with the recommendations for an ideal out-patient service in ophthalmology, which were adopted by the Section as a result of these studies. Criticism of these standards is invited.

In order to achieve any actual improvements in existing conditions, the cooperation of the governing boards and administrators of the several institutions is, of course, essential. The facts stated in the following pages show quite clearly that conditions in eye clinics treating thousands of patients annually are, as a rule, very unsatisfactory.

There is frequently lack of sufficient equipment for the doctors to work with. Space is often insufficient to accommodate the number of persons; inconvenience, crowding, and insufficient service result. The records are generally inadequate, and their care and filing are not provided for according to modern standards. Above all, the number of patients which the physicians on the staffs of those eye clinics are called upon to treat is, as a rule, greater than can be given proper attention in the space and time available. A large proportion of cases presenting serious eye conditions which might bring on permanent blindness are found, from the records, to have attended clinics only once and not to have been followed up.

It is recognized that these conditions are partly due to insufficient funds available in the present budgets provided by the governing boards of the institutions. It is believed, however, that if the boards of managers understood existing conditions, their appreciation of their responsibility to the public for efficient treatment of patients and their pride in the institutions of which they are in charge will lead to a fuller meeting of these obligations. Considerable improvements can be made with little, if any, increase in expenditures, and the recommendations of the Section also include suggestions whereby part of the additional funds needed for certain purposes can be secured.

SUMMARY OF CONDITIONS FOUND BY SURVEY OF REPRESENTATIVE EYE CLINICS IN NEW YORK.

CONSULTATION FACILITIES.—Of the ten clinics studied, two were the out-patient departments of general hospitals, two were independent general dispensaries, and one, the out-patient department of a special institution,

closely affiliated with a general hospital. The clinics just enumerated are provided with adequate consultation facilities in general medicine, surgery and the specialties. The other clinics are more or less hampered in the diagnosis and treatment of patients by lack of such facilities. As ophthalmologists, we must admit that our most careful examinations are limited and insufficient, and that most intra-ocular diseases find their origin outside the eye. For this reason, if we work alone we cannot hope to make any but the most superficial diagnoses, and the recommendation as to the relation of the eye clinic to other clinic departments is therefore considered fundamental.

MEDICAL ORGANIZATION.—The details of medical organization vary considerably in the different institutions studied, but there is some degree of unity of ward and out-patient service in most cases. It is customary for the senior staff to attend the out-patient departments. Clinical assistants have the privilege of following cases into the wards, altho they have no ward duties. In- and out-patient records as a rule are not unified.

Four institutions hold no clinic conferences. In one large institution, only two of the six clinics hold conferences; in another large institution conferences are held for students, at which the attendance of the staff is optional. The importance of such meetings of the staff for the discussion of not only the successes, but the failures of clinic work, needs no argument. That so many of the representative institutions fail to provide for such self analysis is a severe criticism of their desire for professional advancement.

The supervision of newly appointed clinical assistants, students and interns is rather haphazard in many institutions, altho in some instances the work of juniors is very carefully checked before diagnosis is made or treatment instituted.

In all but two institutions, the time of ophthalmologists is being wasted in the performance of such duties as taking of history and vision, management of patients, clerical work, etc.,

all of which could be handled by professional or lay assistants.

SPACE ARRANGEMENT, EQUIPMENT AND FACILITIES.—Rooms and equipment were found inadequate for the efficient diagnosis and treatment of patients. Physicians who provide elaborate equipment, conveniently arranged, for their own offices, were found working in the clinics under crowded conditions, without proper instruments or light. Very often the equipment provided is in such bad order, or so inconveniently arranged, that it is unfit for use. Operating room facilities were found to be much more satisfactory than the provisions for the examination and treatment of patients in the out-patient department.

Several institutions are hampered in their laboratory service because this work is done outside the institution, but, by and large, laboratory service is sufficient and reports were stated to be prompt and accurate.

A standard drug formulary is in use at each institution, but in only one is it customary to revise the formulary every year. In three clinics it was stated that the formulary had not been brought up to date for ten years or longer. In several institutions the solutions provided on the tables in the clinic were found to be contaminated with dust.

ADMISSION AND DISTRIBUTION OF PATIENTS.—The duties of the "registrar," responsible for admission of patients to the clinics, are highly important and include medical classification of the patient, judgment of his ability to pay a private physician, reference to the private offices of physicians, as well as such clerical work as the securing of identifying data, the collection of fees, and so forth. Altho such duties require tact, intelligence, and trained social judgment, the individuals employed to fill these positions are usually paid a low salary, (the average salary paid in 12 clinics was less than \$100 a month), and are enlisted from the clerical or orderly staff of the hospital.

The standards and methods of admission showed wide variations. In only three institutions is it customary

to secure information as to the income and number of dependents of all new patients, with a view to eliminating those applicants whose financial condition renders them ineligible for admission to the clinic. The probable cost of the medical care necessary is not usually considered, in reaching a decision as to the patient's ability to pay. As a rule, information regarding previous medical care is not secured at the admission desk. Data gathered from patients who are refused admission to the clinic are not usually recorded. Altho the admission officer is responsible for the reference of patients to the private offices of physicians, he is not able to inform them of the fee which they may be expected to pay.

FEES.—Admission fees vary from nothing to 50 cents; the charge for Wassermann from nothing to \$2.00. The cheapest glasses are provided at a cost to the patient of from \$1.05 to \$4.00, and gold filled frames with compound lenses at from \$2.30 to \$6.50. The patients of some institutions which charge no admission fees, pay more for glasses than do those patients of institutions which charge admission fees. The optician never fails to make his customary profit, altho the institution provides medical service gratis.

ROUTINE HISTORY AND EXAMINATION.—The character of professional service in different clinics may best be judged by two factors; the average time spent in the examination and treatment of patients, and the completeness of medical records. The estimated average number of patients handled by each member of the medical staff in an hour ranges from three to twelve. Such an average does not, of course, indicate the conditions on a crowded day, when the time spent on each patient in some institutions must be less than two or three minutes. No argument is needed to prove, that the character of medical service possible under such conditions is not consistent with the duty of the institution to the patient. The folly of handling mere numbers in a hurried and incomplete manner should be brought home to the boards of managers of the various clinics.

Only three institutions attempt a routine method of history taking, and only two a routine examination of new patients. In the other institutions, each man follows his own method, which from the data found recorded on the medical records, is often unsatisfactory from a professional standpoint. Because of the necessity of treating inordinate numbers of patients under crowded conditions, without satisfactory assistance or equipment, ophthalmologists are forced into the habit of careless and incomplete clinic work, which causes those who are sincerely scientific in their attitude to lose interest.

REFRACTION AND PROVISION OF GLASSES.—The estimated number of patients refracted per physician per hour ranges from two to twelve, or from thirty minutes to five minutes per refraction. This again is an average and does not portray conditions on crowded days.

In three institutions it was stated that all patients refracted under a cycloplegic are given a postcycloplegic test before glasses are prescribed; however, in one institution only 10%, and in another, no refractions are checked by this method.

In only three of the institutions visited is all of the refraction done by the visiting staff. In three others the members of the staff do a majority of this work; in the rest of the clinics 50% to 100% of refraction is done by students, interns or optometrists; well supervised by the visiting staff in some cases, but in others, working entirely independently.

It is a universally accepted fact that in most clinics routine refraction becomes uninteresting and a veritable drudgery after a period of time. Owing to the fact that many of the patients are of a low grade of intelligence and are stupid and slow in their answers, and because of crowding and lack of proper equipment conveniently arranged, the efficiency of the medical staff is hampered.

Altho it is customary for all clinics to make a charge for various X-ray and laboratory examinations, for special treatments and dressings, there

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is no fee for refraction, a procedure which requires the routine attention of trained physicians. The difficulty in securing the proper type of physicians to perform this routine work without financial compensation has driven the clinics into using inexperienced assistants. Satisfactory professional care of the patient is scarcely possible under these conditions.

The Section has recommended that refractionists be paid, with a view to bettering the service. It considers that funds for the purpose of such improvement should be provided by a direct charge to clinic patients for refraction. There is no difficulty in collecting other similar fees, and it is felt that refraction is a special service for which a large proportion of patients will be willing and are able to pay. The Section feels that it would be preferable to charge a fee and provide adequate service than to continue with the present unsatisfactory arrangement.

The clinics have been severely criticized because of the fact that directions for the use of cycloplegic are not understood by patients, especially children. Half the clinics visited rely on the oral instruction of the patient as to the use of these drugs, the other institutions providing printed directions to supplement the oral instructions.

Only one of the institutions studied has an optical plant. In the others arrangements have been made with outside opticians to have representatives present during clinic hours to receive orders. In eight institutions the optical firm allows the hospital from 25% to 50% of gross receipts in return for this privilege.

Because of the large profit from the sale and repair of glasses, these opticians, even after transferring to the institution 50% of gross receipts, derive considerable income from the dispensary patients. The Section considers it desirable to transfer such profits to the institution, in so far as possible, which will be done if the recommendation made is followed.

When an institution refers patients to a special optical firm it assumes a

certain amount of responsibility for the quality of service rendered. The supervision necessary to secure accurate filling of prescriptions and satisfactory materials would be much easier if the optical work were done by an employe of the institution, as is recommended.

FOLLOW-UP.—Over five thousand records were studied to ascertain the proportion of patients attending clinic a sufficient number of times to alleviate or cure eye conditions presented and to prevent the spread of contagion. This study brought out the significant fact that of the patients presenting serious eye conditions which might bring on permanent blindness, 53.4% attended the clinic only once. The records showed little evidence of any attempt to insure proper care to the patient, beyond the filling of prescriptions for drugs and glasses; and no serious effort to have been made to insure the return of the cases until cure was effected. An exception to this is the work of the New York State Commission for the Blind, which has provided two workers for special follow-up in two large eye clinics.

RECORDS AND FILING.—As tangible evidence of the character of professional work done in the representative ophthalmologic institutions, the records studied were very disappointing. Of the 500 records analyzed, history was recorded in only 55% of cases; a tentative or final diagnosis in 68%, treatment in 76%, refraction in 45%, muscle examination in 44%. Only 39% of the patients whose records were studied returned to the clinic.

The proportions given above do not actually indicate the utter inadequacy of the records in some institutions. In one clinic 68% of the cases were not diagnosed on the record; in one, 92% of the records showed no history; the treatment instituted was not recorded for 47% of the medical histories in another clinic, and vision was noted on only half and refraction on one-quarter of the records in another institution.

RESEARCH AND TEACHING.—No real organization for research was found in any institution. In one clinic interesting cases are cross indexed by disease and available for teaching and study. No use is made of the remaining mass of clinical material in the other institutions for the advancement of knowledge in the prevention or treatment of disease.

EFFICIENCY TESTS AND STATISTICS.—It is not customary to review the results of work in the out-patient department, or to inquire into the reasons why satisfactory results are not obtained. Periodic efficiency tests would shed much light on the lack of effectiveness of present methods.

STANDARDS FOR OUT-PATIENT SERVICE IN OPHTHALMOLOGY.

The standards adopted by the Associated Out-Patient Clinics of New York City, indicated below, are intended to set forth principles of organization and procedure, and certain facilities and equipment which are believed to be requisite for satisfactory out-patient service in ophthalmology. These principles are accompanied by certain detailed suggestions as to the manner in which they may be practically applied. It is recognized that no set of standards can be applied in detail in the same way in every institution, but it is believed that the fundamental principles herein outlined are generally desirable.

A. RELATIONS, CONSULTATIONS.—In order that underlying causes of disease may be determined with accuracy, it is essential that every eye clinic should have the closest possible relationship with clinics for general medicine, oral surgery and the specialties, so that reports on referred cases may be prompt and complete, consultations frequent and conferences of the entire staff held regularly.

B. ORGANIZATION AND PERSONNEL.—*Medical Ward service* for patients needing observation, operation or treatment should be provided either by an in-patient department or by close affiliation with some other institution.

The staff of the out-patient department and the hospital should constitute one organization. Every member of the

staff should have some duties and privileges in the out-patient department and, after a proper period of probation, some ward and operating room duties and privileges.

Each department should have a *chief of clinic*, or his equivalent, with rank at least equal to an assistant attending on the wards. He should be the senior assistant surgeon in the operating room. The chief of clinic should be responsible for the carrying out of medical standards and should be in direct charge of the clinic work under the direction of the surgeon. The chief of clinic should assign special duties to members of the staff and once a month a schedule of these duties should be posted.

If it is possible every *new patient* should be seen by the surgeon, chief of clinic (or their representative) before a diagnosis is made or treatment instituted. The surgeon or chief of clinic should be responsible for assigning new cases to the staff. The surgeon or chief of clinic should determine when a patient should be admitted to the wards.

One member of the staff should be available for *home visiting* at the request of the visiting nursing or social service department. Proper compensation should be provided for this service.

The *interns* on duty in the wards should be definitely assigned regular duties in the out-patient department. They should supervise history taking and the recording of vision and should also be permitted to examine patients and record their findings.

The entire staff should be assigned definite hours for *attendance* in the out-patient department. The chief of clinic should be present during the entire clinic session of the day he is on duty. The chief surgeon should spend at least part of each day in the clinic, so that the chief of clinic may consult with him in regard to the admission, diagnosis and treatment of patients, and in order that all his assistants may benefit by his experience. Certain days should be set aside for members of the clinic staff to visit other hospitals and study professional procedures and methods of organization. A record of attendance should be kept and analyzed periodically.

Clinic conferences should be held every week. The younger men should be

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urged to present patients and report cases. Rare and well studied cases should be presented before the monthly staff conference. Joint conferences of all clinics for the discussion of both ward and dispensary cases should be held once a month, at which the attendance of all members of the staff should be required.

Professional and lay assistants. The physician should be relieved as fully as possible of duties not directly concerned with the professional care of patients; by the delegation of such duties to trained technical assistants, executive, nursing, social service, and clerical. Vision and routine muscle examination may be made by trained technical assistants or by the resident physician. It is desirable that a *social service worker* be on duty during each clinic session so that she may become more familiar with the medical problems of the patients, and assist the physician in dealing with those factors of the personality and environment of patients which bear upon the medical situation.

C. SPACE, ARRANGEMENT, EQUIPMENT AND FACILITIES.—There should be adequate rooms for examination and for teaching purpose. In large clinics this would include a clinic room for diagnosis and treatment, a dark room, refraction room, clinic operating room, hospital operating room, room for roentgenology and a dark room for physiologic optics.

Equipment for an ophthalmologic clinic should consist at least of the following:

- Trial cases (one for each man).
- Trial frame (one for each man).
- Retinoscopy racks (set for each man).
- Retinoscopes (one for each man).
- Ophthalmoscope: a. Electric (one per two men.) b. Plain (one per two men).
- Ophthalmometer (one for clinic on perimeter table).
- Tonometer (one for clinic).
- Instruments—for minor operations—lid everters, tongue depressor, spuds, etc.
- Sterilizer (one for clinic).
- Corneal microscope (one for clinic).
- Perimeter (two for clinic—one hand and one on perimeter table).
- Near type (one illiterate and one usual for each man).

Lighting (general day light values with local day light values for instruments and examination. Spotlights for muscle testing, controlled from chair.)

Color carriers (1, 5, 10 and 40 mm. square).

Color tests: a. Wool tests (one for clinic)—Jennings test suggested. b. Ishihari tests (one for clinic). c. Central color test (Abney Oliver color test, or Thomson Henderson scotometer).

Prince rule or substitute (one for each man).

Test cards and lighting (one illiterate and one usual per man—clean and well lighted).

Tangent screen (one for clinic or for 10 ophthalmologists).

Prisms: a. Round (set per man). b. Square (set per man).

Arrangement for muscle testing (light with iris diaphragm and Maddox Rod for each man, also one red diplopia glass).

Stereoscopic Vision tests, amblyoscope, and one stereoscope with cards for each clinic.

Transilluminator (one for each clinic of ten men).

Exophthalmometer (one for each clinic).

One refraction and treatment chair and treatment table for each ophthalmologist, and two extra surgical chairs and surgical tables.

Binocular loupe (one for each man).

Monocular loupe (one for each man).

Lenses for oblique illumination and indirect ophthalmoscopy (one for each man).

Equipment should be conveniently arranged.

Some member of the administrative staff should be responsible for seeing that equipment is complete and in good order.

The *pharmacy* should be under the direction of a registered pharmacist. A standard formulary should be adopted and revised every year.

The services of a modern *laboratory* and *X-ray plant* should be available during dispensary hours. The laboratory should be equipped to do pathologic, serologic and bacteriologic work.

E. PROCEDURE.—Admission and distribution of patients. The number of patients should be limited in propor-

tion to the staff and the facilities. Time for a physician to examine a new case should average not less than 10 minutes, and for an old case, not less than 5 minutes. If there is present for the assistance of every physician a trained nonmedical assistant, who can take the vision, write histories, check lenses, take fields and blind spots, the physician's time for new cases should average not less than 7 minutes, and for return cases 3 minutes. In large clinics the chief surgeon and the chief of clinic should not be counted when determining the number of patients to be admitted, as their time is required for supervision.

As far as possible, visits should be made according to *prearranged appointments*. The details of organization will need to be modified to meet the possibilities of individual institutions.

"As the dispensary law requires the gathering of certain social facts at the admission desk, it is important to have this information obtained by a person trained in social work. This prevents the oversight of acute social situations and also keeps the social service department in touch with the dispensary intake." (Extract from Recommendations of Social Service Section of A. O. P. C.)

The admission officer should be responsible for securing accurate identifying data. The admission officer should ascertain as a matter of routine what the previous medical care of the patient has been. The admission of patients who have recently attended another institution should be discouraged. The admission officer should ascertain the type of disease and probable cost of medical care, the resources of the individual, with special reference to the amount of income, and his responsibilities, especially the number of dependents. Some standard should be formulated to serve as a basis for the economic classification of patients. The admission officer should remit fees for patients recommended by the social service department, and should be responsible for remitting fees of other patients subject to the approval of the superintendent.

The social service department

should not be used primarily for financial investigation. There should, however, be close cooperation between the social service department and the hospital administration in relation to financial status of patients. Such investigation should be done by a financial investigator in cooperation with the social service department. The admission officer should record data used as the basis for judgment in refusing admission, and this should be available for review.

The administration should ascertain which physicians of the clinic are willing to have patients referred to their private offices. The list of such volunteers should be passed upon by the Board of Surgeons. The admission officer should be informed of the maximum fee charged by the physicians in this list for the first consultation. If the list of physicians volunteering for this service is more than four or five, the patient should be referred to only the physician or physicians nearest his residence. In clinics where there is more than one service, patient should be referred to physicians of the service which is on duty the day the patient visits the clinic.

Only those patients who are actually being examined should be in the clinic waiting room. Patients with drops in their eyes and others waiting for examination should be kept in the waiting room.

No children under 14 should be admitted to the clinic unless accompanied by an adult, the only exceptions to be emergency cases. Any agency referring children to clinics should be responsible for seeing that an adult accompanies them.

It is desirable that stated fees be charged patients for admission, and that additional charges be made for medicine, appliances, and other special procedures or material.

The following special suggestions are made: A refraction fee should be charged. To simplify bookkeeping and admission charges, this should be a flat fee of \$1 in addition to the regular admission fee, no matter how many visits are necessary in order to complete refraction.

A charge of at least 25 cents should

be made for each visit to the clinic. There should be a profit from the sale of drugs, sufficient to cover easily the cost of free prescriptions when these are necessary. The maximum fee for Wassermann should be \$1. The fee for the administration of salvarsan should be not more than \$3.00. Prices charged for glasses by the clinic should be below the current prices of outside opticians, but a reasonable profit should be made.

Routine history and examination. It is considered essential that a routine method of taking the history and making the examination of patients be standardized in each clinic. Wassermann tests should be made as a routine on all cases in which syphilis is an etiologic factor.

Treatment. All patients making re-visits should be referred to the physician who saw them originally, and his name should be in conspicuous place on the record and on the folder. Written or printed directions should be given for all treatment. Detailed and careful instructions as to the use and effect of a cycloplegic should be given. Oral should be supplemented by written instructions. All patients refracted under a cycloplegic should, if possible, have a postcycloplegic test before glasses are prescribed. In compliance with the Sanitary Code of the City of New York "the treatment of syphilis, whatever its manifestations, shall be conducted in a special department maintained for such purpose or in the department for dermatology connected with the dispensary or hospital. Provided, however, when the nature of the part affected, such as the eye, throat, viscera, etc., necessitates treatment in some other department of the dispensary, treatment may be given jointly by the two departments." (Section 233-A-Regulation 1.)

Refraction, relation to optician, and provision of glasses. In large clinics refraction should be done in a special clinic under the supervision of an experienced ophthalmologist and with an adequate number of assistants, including the house staff. All patients should be admitted first to the general eye clinic and, after suitable examination and when indicated, should be referred to the special refraction clinic. In large refraction

clinics, at least the physician in charge should be on a salary basis.

Each institution should either (1) have its own plant for manufacturing glasses, or (2) employ an optician on a full or part time basis to fit and make glasses, contract with a wholesale firm to furnish materials at wholesale prices, and sell the glasses to patients at the clinic. The optician should be paid a salary for conducting the optical business with a percentage bonus for all work done over a specified amount. The optical department should be as near as possible to the refraction room or rooms, in order that consultations between the ophthalmologist and the optician may be more frequent. Prices for all types of glasses should be posted. A deposit should be required at the time glasses are ordered. There should be little or no restriction of the type of frames allowed for dispensary patients.

Social service and follow-up. In addition to the usual functions of social service in all clinics, social service in the ophthalmologic clinic should give special attention to the following duties:

In the case of retinitis pigmentosa, congenital cataracts, syphilis and tuberculosis, careful inquiry into the family history, and bringing other members of the family to the clinic for examination when indicated. Improving home hygiene, especially in trachoma and phlyctenular keratoconjunctivitis. Helping patients obtain glasses, protheses, etc. Following patients with poor vision to supervise working conditions, helping them to find other employment, if necessary, and in the case of school children, arranging for their transfer to sight conservation classes.

Systematic follow-up to insure continued treatment for at least the following types of cases should be instituted: Conjunctivitis, acute purulent and mucopurulent conjunctivitis, trachoma, optic nerve diseases, atrophy, papillitis, papilledema, retrobulbar neuritis. Corneal diseases, interstitial keratitis, tubercular keratitis, phlyctenular keratitis, ulcers of the cornea. Eyeball, glaucoma, sympathetic ophthalmia. Uveal tract, tubercular choroiditis, iritis, acute uveitis, sarcoma of the choroid. Retina, retinitis diabetica, syphilitica and pigmentosa. (Family study of the last two named.)

Physicians should be responsible for seeing that the patient is informed of the nature of the disease and the importance of treatment, and for deciding on what date the patient should return. The social service department, with such clerical assistance as is necessary, should record the name of the patient whose return is desired, and, thru the proper methods, endeavor to secure his return at the date specified.

Records and Filing. All the records for the clinic should be filed centrally. Hospital and out-patient department records should be unified as completely as possible. Records and filing in both hospital and clinic should be under the direction of the same person. Some member of the clinic staff should be responsible for the completeness of the clinic records.

Records should be cross indexed by diagnoses and operations. A standard nomenclature should be adopted for use in each institution, and an effort made to bring about the use of a uniform nomenclature in all institutions.

RESEARCH AND TEACHING.—Every physician and student working in the clinic should be encouraged to do a certain amount of research. The resources of the clinic should be used to the maximum in teaching practising ophthalmologists, students and resident physicians. The teaching should be organized in connection with a medical school.

EFFICIENCY TESTS AND STATISTICS.—There should be periodic review of the type of work done in the out-patient department, and of the results obtained. Results should be posted on the clinic bulletin boards and be discussed at conferences.

The Secretary of the Section has prepared several articles: "Medical Research in Connection with Ophthalmological Hospitals and Clinics," "Rooms and Equipment for Ophthalmological Clinics," "Case Records in Out-Patient Departments of Ophthalmology," "Routine History and Examination of Ophthalmological Patients," "Ophthalmological Nomenclature and Classification of Eye Diseases and Operations, with Definitions." Copies of these are available on application to the Associated Out-Patient Clinics, 15 West 43rd Street, New York City.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS.

It is now quite generally known among ophthalmologists that this Board is composed of three representatives from each of the following societies: American Ophthalmological Society, Academy of Ophthalmology and Oto-Laryngology, and the Section on Ophthalmology of the American Medical Association.

The Board which was incorporated in 1917 is empowered to confer upon candidates its certificate, which reads:

The American Board for Ophthalmic Examinations hereby certifies that(name)..... has pursued an accepted course of graduate study and clinical work, and has successfully passed the examination in Ophthalmology conducted under the authority of this Board.

Issued.....19

Chairman..... Secretary.....
(Signatures of the Board.)

It is not so generally known that since 1920 possession of this Certificate is required of every applicant for membership in the American Ophthalmological Society, and of every applicant for ophthalmological membership in the Academy of Ophthalmology and Oto-Laryngology, unless such applicant shall possess a degree in Ophthalmology conferred by a University recognized by the Board as competent to prepare students for such a degree.

The Board conducts examinations at stated times to determine the competency of individuals to practice ophthalmology, and has formulated certain rules and requirements in regard to applicants for its certificate.

In accordance with these rules applicants are arranged in three classes:

Class I. Those who have practiced Ophthalmology ten years or more.

Class II. Those who have practiced Ophthalmology more than five years, and less than ten years.

Class III. Those who have practiced Ophthalmology less than five years.

The following general requirements are demanded by the Board:

(1) For all classes, *high ethical and medical standing* in their communities,

and also a *medical degree* satisfactory to the Board.

(2) Formal application on a proper blank, with two letters of endorsement by well known medical men.

The additional requirements for the three classes are as follows:

Class I. (1) Presentation of reports of ten cases that have been observed or treated by the applicant.

(2) A list of papers or books published, if any.

The Board will determine from such case reports and published records, and from the candidate's professional work in his community, whether further examination will be necessary before conferring its certificate.

Class II. (1) Report of twenty-five cases that have been observed and treated by the applicant.

If the applicant gives evidence of service as an intern in an ophthalmic hospital, or as an assistant in an eye clinic, or with an ophthalmologist in private work, with a statement of the work required by the position, the Board will consider these qualifications, in determining whether it deems it necessary to subject the candidate to further examination.

Class III. (1) A degree from a medical school of high standing, satisfactory to the Board of Examiners. Graduates since 1920 will be required to show that they have had a year of clinical hospital experience, preferably in a general hospital, or laboratory work following four years in a medical school, preliminary to special study of ophthalmology and service as ophthalmic interne.

(2) A certificate of one year's service in an ophthalmic clinic, or an internship of one year in an ophthalmic hospital, or assistantship in private practice, with statement of the duties required in such position.

(3) In addition, certificates showing one year of special study of ophthalmology under competent instructors, or in accepted institutions for graduate teaching; not necessarily continuous nor at the same place; but periods of study of less than three months at one institution are deprecated by the Board.

(4) Report of twenty-five cases that have been observed and treated by the applicant.

(5) Written and practical examination in ophthalmic subjects when deemed necessary by the Board.

Such practical examinations are given to enable the Board to determine whether the applicant has acquired the technic necessary to perform the various examinations and operations of the eye; and whether he has been trained to observe accurately and systematically, and make proper deductions and diagnoses from his findings. In these examinations the written part counts for much less than the practical examination, which comprises the subjects of External Diseases, Ophthalmoscopy, Pathology, Refraction, Ocular Muscles, Perimetry, Relation of the Eye to General Disease, and Therapeutics.

Applicants in Class III are almost without exception required to take such an examination; but the Board is usually able to determine from the character of case reports whether it is necessary for individuals in Class II to be subjected to any further examination than that of their record and case reports.

The last examination held by the Board was in Minneapolis, September 18, 1922, at the time of the meeting of the Academy of Ophthalmology and Oto-Laryngology, at which time nineteen candidates presented themselves for examination.

Up to the present date 357 persons in the United States have received certificates of the Board.

The next examination will be held in San Francisco at the time of the meeting of the American Medical Association, June 25th, 1923, probably at the clinic rooms of the medical department of the University of California. Persons desiring to take these examinations should communicate with the Secretary of the Board, and receive from him formal blanks on which application will be made. Such application must be considered by the Committee on Requirements of the Board before the examination is taken, and, as this requires some time, the Board insists on having such applications in the hands of the Secretary sixty days before the date of the examinations.

Address all communications to
DR. WM. H. WILDER, Secretary,
122 S. Michigan Blvd., Chicago, Ill.

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THE PSYCHIC ELEMENT IN OPHTHALMOLOGY.

The practice of medicine has so many problems, and the attention of the physician is so strongly attracted to the pathologic process itself, with its varied symptoms, diagnoses and therapeutic requirements, that he is likely to forget one important factor; the patient's attitude of mind in regard to his disease; his fears, apprehensions and hopes.

This psychic element is, however, of great importance, and to find it and use it properly, will realize a high ethical ideal and do much for the welfare of the patient and the success of the treatment. To relieve the patient's mind from his burden of sickness and anxiety, and establish between physician and patient a bond of confidence, trust and friendly intercourse, was an achievement for the family physician of older days, unfortunately very much neglected by the specialist of today.

In many cases the anticipation of evil is worse than any existing disease, and the only way to overcome it and allay the patient's fears is to consider not only the pathologic lesions, but the psychic element as well. If the pa-

tient's nervous tension and evil forebodings are not relieved in the proper way, by the confident assurance of final success in the treatment, which is the secret of a compelling medical personality, superficial or careless advice or bad anticipations will do great harm, making the patient worse and turning him for better advice elsewhere.

Ophthalmology being the most accurate and scientific branch of medicine, where the lesions can generally be seen and studied properly and the treatment directed to the cause, would seem less dependent than other specialties, neurology for instance, upon the physician's personality and influence over the patient. But the organ of vision being so important in every day life, its impairment becomes immediately a source of great anxiety for the patient, who does not care for our diagnosis, but for the prognosis and the disability the lesion may produce.

The way in which the examination is made gives the patient his first impression of the physician's ability, and also decides to some extent, if he is ready to give his trust and confidence to his adviser or not. Brusque man-

ners, overbearing attitude, curt replies, a showing of great hurry, produce a very bad and lasting impression on the patient.

The work of refraction, with its slow tiresome examinations, is very apt to make the oculist impatient; particularly when the subject is nervous, of low mentality, or frightened by the use of apparatus, the dark room, etc. This is, of course, more frequent in the case of badly educated or backward children. In all these cases a kind word, a smile, a little rest, will do much to encourage the patient and increase the value of the optical tests. Sometimes it is a wise measure to have the patient come back a second and a third time. He knows then what is expected of him; and his answers will be more accurate and reliable. There is also greater chance that he will find his glasses useful and comfortable, and will wear them.

In neurasthenic patients it is very important to place the fault where it properly belongs, and not to blame a faulty correction or any muscular imbalance as the origin of the trouble, when the symptoms are due to the general condition. The patient is very much affected by his sickness, and gives a history of continued trouble, not relieved by the many ophthalmologists whom he has consulted, the many lenses or prisms he has worn, or the muscular exercises he has more or less faithfully tried.

If the new examination is conducted along the beaten path, without paying any attention to the psychic factor, no better results will be obtained. On the other hand, if we explain to the patient the importance of treating his general condition, having the proper rest, etc., that no serious trouble is ahead of him, and that he will get well, his anxiety and fears will be relieved, and often a cure effected.

A frequent source of complaint in the correction of presbyopia in normal persons, is the distance of the near point. It should be borne in mind that the patient will be better satisfied with a weaker than with a stronger correction. The latter bringing his reading distance very close, and precluding all accommodation, makes the range for near vision

too short, and generally unsuitable for other kinds of work than reading. The requirements of the patient for near work should always be kept in mind. The binocular accommodation being regularly higher than the monocular, as Dr. Duane has recently pointed out, a final test with both eyes should be made before prescribing the glasses.

Neurasthenics with insufficiency of the accommodation are very much benefited by the use of glasses for near work. Altho the accommodation may be normal for the age, it soon gives out after exertion at reading or sewing. Young hyperopes, who for a long time have been using prisms or trying muscular exercises for heterophoria, are much relieved when a presbyopic correction is given to help the asthenic ciliary muscle, and make reading and other near work comfortable.

A mistake very frequently made is to dismiss the patient summarily when he comes back complaining that his glasses are bad or useless. The slogan "you will get used to them in time," is a poor one. Indeed, in many cases there is some cause for complaint, but in a large number the psychic element is the paramount issue. If the patient is told to get accustomed to the glasses without any encouragement, without any explanation, he will generally try them for a while without faith, and discard them at the least pretext, especially in hyperopia and astigmatic conditions. Young people or ladies will take advantage of this apparent failure of the ophthalmologist, and decide they are unable to wear them.

On the other hand, if the patient is briefly tested again to show him that his vision improves a good deal, and a few glasses are tried to prove that stronger or weaker corrections will not give better results, he will be immediately convinced of the oculist's skill, and in all probability, not only use his correction but, what is very important, will keep faith in the physician and not try others.

Muscae volitantes are a frequent source of anxiety and are watched carefully for fear of ensuing blindness.

Cataract, especially in its incipient stages, is a great source of worry. The dark shadows in the field of vision, increasing continually, produce a great fear of total and permanent blindness. In neuropathics, this idea will make them miserable and change totally their outlook on life. Cataract had in the past the bad reputation of being very difficult to cure, on account of the repeated failures after operations. The improved modern methods of treatment lend a prognosis possible of which the layman is still unfamiliar.

More human indeed is it to conceal from the patient the beginning of a cataract, unnoticeable to him when equatorial, and let the diagnosis be known to the family only. In some cases the patient's life will not be long enough to become blind.

Much has been written on the moral duty of the physician toward his patient when blindness is impending. This question, however, cannot be settled by fixed rules. In a general way, concealing or attenuating the truth is by far the most humane and safe way, kindling at the same time the patient's hopes with kind words, the promise of relief or cure in the future or by trying some new therapeutic agencies.

In exceptional cases, when a patient with strong personality needs, for special reasons, to know the truth, this is to be given in order to avoid worse results, as impending ruin, change of location, etc.

Altruistic motives need to be emphasized in dispensary practice. In big cities the flow of patients in large clinics, and the constant shifting from one institution to another, prevents to a great degree, a personal relationship from being established with the majority. But with faithful patients in severe or obstinate conditions, the physician's acquaintance and help is much to be desired, as the tendency to consider clinical patients as mere "cases," or material with a view to research work or teaching purposes, becomes more marked.

The personal interest and attention in each case is rewarded, on the other hand, by the patients being more faith-

ful and more appreciative of the work done for them, and so coming more regularly, enabling the physician to keep track of the course of the disease and study the lesions which interest him particularly.

The Social Service help is not so often sought as it should be. Its work is very important, and may be of great assistance in furthering the task of the physician in the treatment of the psychic element of disease.

M. URIBE TRONCOSO.

THE LID PLATE.

An article on trachoma recently published in the *JOURNAL* (v. 5. p. 799) describes the changes produced in the eyelids in a way that illustrates and tends to perpetuate the confusion existing with regard to the true character of the "tarsal cartilage." The description used might be held to apply to the tissue present, but it would be strictly appropriate only if the lid contained hyalin cartilage, which it does not. Several subscribers and collaborators have called attention to this matter. The confusion is rather widespread; it illustrates clearly the process by which language changes and develops; and on that account is worthy of attention here.

In Johnson's dictionary, compiled over 150 years ago, and in the American edition published in 1819, the definition of cartilage was; "a smooth and solid body softer than bone, but harder than ligament." This applied to the structure in the eyelids known as the lid cartilage. It remained strictly accurate and was complete, until the compound microscope was used for the study of animal tissues, revealing the facts of histology, and causing the cell theory to be applied to animal tissues (Schwann, 1839) and yielding the histologic definition of cartilage—a tissue composed essentially of "cells embedded in an opalescent matrix, either homogeneous or fibrous."

The plate of firm tissue in each of the human eyelids contains no cartilage cells; and in the histologic sense

the term cartilage should not be applied to it, altho true cartilage is found in the eyelids of some animals. Every general English dictionary, except one, still gives the term "lid cartilage" as proper, and in only one medical dictionary is found the word cartilage in this connection. "Tarsal cartilage" referring to this structure is quite as widely used, and is found in the last editions of some text books of ophthalmology.

There is abundant excuse for the use of these terms in the old sense, especially since a very large proportion of those practicing ophthalmology as a specialty never carefully examined microscopically the section of an eyelid. But the best usage has changed the meaning of "cartilage" by giving it a definite histologic meaning; and progress in the exact use of language demands that the old, looser use of the word be given up.

What is the best term to designate this firm, flexible structure that has often been referred to as the skeleton of the lid? Since histologic study rendered the use of "cartilage" in this connection improper, "tarsus" has been very frequently used to designate the lid plate. In many respects it would be an admirable term if it had not the long established meaning, "the part of the skeleton between the lower leg and the metatarsus." That meaning for tarsus is given first in the dictionaries, is far more widely used in zoology, and shows its direct connection with the old Greek word for heel or hoof. The feeling that it is not quite right to designate this firm structure in the eyelid by the word which means ankle, is revealed by the tendency to call the former the "tarsal plate."

But the word "tarsal" used thus gets its connection with the eyelid wholly thru the word tarsus applied to the same structure. Would it not be better, as it would be shorter and more descriptive, to call this firm, flexible plate of condensed connective tissue the lid plate; as it has sometimes been called heretofore? The word "cartilage" evidently has proved misleading

to some who have used it; "lid plate" could scarcely be misunderstood.

E. J.

OPHTHALMIC MEETINGS.

June 19, 20 and 21, the American Ophthalmological Society will meet in the Hotel Broadmoor at Colorado Springs. June 27, 28 and 29 the Section of Ophthalmology of the American Medical Association will meet in San Francisco. The programs of these meetings are not yet announced, but the records of both of these organizations give complete assurance that the papers and discussions that will fill their sessions will be of the highest interest to all active ophthalmologists.

The sections of the A. M. A. are, of course, open to all Fellows of the Association that choose to register in them. The Ophthalmological Society limits its membership, but has always welcomed ophthalmologists of good professional standing to attendance at its meetings. Last year the number of guests who registered their attendance almost equalled the number of its members present.

The arrangement of these meetings for successive weeks offers a very attractive combination for eastern ophthalmologists. They can come to Colorado, see something of its attractions, and attend the scientific gatherings of the American Ophthalmological Society. Then there will be time to see the Grand Canon, or to stop at Salt Lake, or to visit Los Angeles, before going to the Section meetings of the A. M. A. at San Francisco. Following the A. M. A. meeting, carefully arranged excursions will be available to the Northwestern National Parks, to Honolulu and the Hawaiian Islands, to Alaska, and to the mountain and glacier regions of Western Canada. To take one of these excursions will require three or four weeks. Returning from it, the course of graduate study of the Ernest Fuchs Society, and Colorado Congress of Ophthalmology and Oto-Laryngology at Denver can be attended July 16 to 31.

The postponed course of the Ernest Fuchs Society will be given in co-

operation with the Colorado Ophthalmological and Oto-Laryngologic societies in the Auditorium of the Medical Society of the City and County of Denver, July 16 to 28 inclusive; and on July 30 and 31 the Colorado Congress will be held in the same place. In the postponed course, most of the instructors, who were expected to participate in the course at New Orleans, will give the instruction announced for that course; and other well known teachers will take part.

The second week in October will bring to Washington, D. C., the members of the American Academy of Ophthalmology and Oto-Laryngology for their annual meeting, and three days of graduate work. The standing of these meetings, the museums and other attractions of Washington, and the fact that this will be the only national ophthalmic meeting held in the Eastern United States this year, will doubtless make it especially attractive and successful.

E. J.

BOOK NOTICES.

Glaucome et Hypotonie. Prof. F. Lagrange, Bordeaux, 432 pages, 104 illustrations and six color plates. Octave Doin, Paris. 1922.

The name of Prof. Lagrange is well known, being associated with his operation for chronic glaucoma. He has published recently an interesting and comprehensive book, dealing with the surgical therapeutics of this disease, and disavows any intention of writing a complete treatise on glaucoma; or on hypotony, which he studies in comparison at the end of the volume. In order to establish on a physiologic foundation his operation for glaucoma, he reviews in a clear and comprehensive way the basic problems of the nutrition of the eye, first in the preface of the book and then in the chapter of pathogenesis of glaucoma.

It is interesting to notice that his ideas on this subject are the classical ones. He supports the existence of a continuous current of the aqueous humor thru the angle of the anterior chamber, (as the reviewer himself has

established experimentally), against the new conceptions of Weiss, Hamburger and lately Magitot, who deny this current and consider the aqueous as a stagnant fluid, subject only to the changes of the blood pressure. For this school, the angle of the anterior chamber and the Schlemm canal have no physiologic importance, or special function. Lagrange considers the results of his operation of sclerectomiridectomy as speaking clearly in favor of a continual escape of the aqueous, thru the Schlemm canal, toward the lymphatic spaces under the conjunctiva.

The aqueous itself is a secretion of the ciliary body, which is a true gland because, amongst other reasons, the author has found there the more evident epithelial tumors, adenomas, epitheliomas and carcinomas. On the other hand, and this is one of the features of the book, the opposition between the causes of glaucoma and essential ophthalmomalacia is illuminating, as regards the circulation of fluids in the eye. Experimentally in rabbits, and then in human beings by an operation which he calls "blindage" or "colmatage," the author has succeeded in elevating the tension of eyes in a state of hypotony (high myopia, detachment of the retina), by closing the venous and lymphatic channels over the sclera around the limbus. Altho the increase of tension, at first very considerable, falls quickly, it rises again to a level above the primary tension.

Lagrange defines glaucoma as: a dystrophy of the eye characterized anatomically by vascular and nervous degenerations, and clinically by hypertension. In the glaucomatous eye there are two principal disturbances: 1st. Hypertension. 2d. Trophic changes, especially in the anterior end of the optic nerve. The glaucomatous patient is a Brightic, a cardiac or a lithiasic, and almost always an arthritic patient, or a sufferer of hypertension. He is also emotional and under the influence of the nervous system, the natural emunctories work badly; toxins remain in the blood current and

produce the stimulation of the sympathetic and trigeminus, with an attendant increase in the secretion of the fluids.

In another chapter Lagrange blames also troubles in the thyroid and parathyroid glands, as the cause of the stimulation of the sympathetic and ensuing vasodilatation. It is the old secretory neurosis of Donders, revived when all other theories seem to have failed. Altho Lagrange mentions the reviewer's ideas on the change of the chemical composition of the aqueous and vitreous to explain the cause of glaucoma, he is a convinced partisan of the nervous theory, which is not demonstrated and has no pathologic support.

A sharp distinction is made in the book between hypertension and glaucoma, and the latter is divided under five heads: 1. Prodromic glaucoma, 2. Chronic simple glaucoma with intermittent hypertension. 3. Chronic glaucoma with constant hypertension. 4. Irritative glaucoma and 5. Acute glaucoma.

After studying the symptoms, pathology and prognosis of glaucoma, Lagrange describes the medical and surgical treatment, with special reference to his operation of sclerectomiridectomy. He claims priority over Herbert, who published his paper some months after Lagrange, and considers Holth's operation and Elliot's trephining as mere modifications of the technic of his own method.

The greater part of the book is devoted to the study of filtering scars, better called scleral fistulas, which, altho not obtained in some exceptional cases, are the rule with his method.

In support of his views he quotes some experimental studies made on rabbits by him and his assistants, in which a perfect subconjunctival fistula was obtained and remained open for eleven months.

He has found three varieties of fistular scars, viz: 1. Simple thinning of the sclera. 2. Subconjunctival fistula. 3. Ampullar elevation of the conjunctiva, which he considers the result not only of the manner the operation is performed, but also of the condition

of the eye. He quotes 104 cases of his personal statistics, of whom fifteen only were unsuccessful, and of these eight times on account of the formation of a cataract. He refers also to the voluminous literature on the subject.

For him Elliot's operation "is bad, the technic being defective and the risks of infection greater" than with his own method.

The book is interesting, and will be of great profit and value for the surgeon who wants to obtain a larger view of the much discussed topic of scleral resections and its permanent value.

M. URIBE TRONCOSO.

Abstract-Bulletin of Nela Research Laboratory. Edward P. Hyde, Director. Vol. 1, No. 3. Pages I-IX, 303-521; 12 plates and 60 illustrations in the text. Published by the Research Department, National Lamp Works of the General Electric Company, Cleveland, Ohio, 1922.

The Nela Research Laboratory includes two divisions—one of pure science, with Dr. Ernest Fox Nichols, Director; the other of applied science, M. Luckiesh, Director. Some sixteen different workers have contributed to the present number of the Abstract Bulletin; including, beside the directors, illuminating engineers, the psychologist, Professor Troland of Harvard, such well known workers in physiologic optics as Luckiesh and Cobb, and several others. The papers here collected are generally abstracts, or extracts, from papers or monographs, which have been published in full in the transactions of societies before which they were presented, or in leading technical journals of this country or Europe. In this way they report the important results of original investigation, in condensed form that renders them most readily accessible to the mass of readers.

Of the thirty-seven abstracts here published, twenty-four refer more or less to topics of physiologic optics; the others refer to radio-physics and chemistry. Among the former are dis-

cussed the visibility of radiations, thresholds for colors, laws of fatigue, after images, transmission by different media, etc.; matters that easily may become the bases of important practical deductions, altho at present to be regarded as questions of pure science. Some, however, are distinctly papers on applied science, as the paper of the Director on "Lighting of the Cleveland Museum of Art." The illustrations include diagrams and reproduced photographs showing apparatus, graphs of results obtained by experiments, representations of the spectra from photographs of light from various sources, or radiations thru various media.

This publication is one that should be in every complete library on ophthalmology. Familiarity with what it contains will be a valuable addition to the resources of any one who attempts to give practical application to physiologic optics in solving the problems of ocular hygiene and disease.

E. J.

Deutsche ophthalmologischen Gesellschaft. Bericht ueber die 43 Versammlung in Jena, 1922. A. Wagenmann, Secretary. 346 pages, 74 illustrations. Munich. J. F. Bergmann, 1922.

If the name of this society were always translated "German Ophthalmological Society," instead of calling it colloquially the "Heidelberg Congress," its character and importance would be better understood. It is not strictly national, for its 711 members include German speaking ophthalmologists from all parts of the world; among them, even since the late world war, are 14 from the United States and 5 from the British Empire. The meeting for 1922 was held, not at Heidelberg, but at Jena; and was attended by 257 of the members.

At the five scientific sessions, sixty-three papers were presented; and at the "demonstration session" nineteen different members presented each from one to eight specimens, pieces of apparatus or methods which they demonstrated. Necessarily the papers are brief; they average less than four

pages each, and the discussions on them only occupy one-tenth of the space given to the papers. Despite the difficulty of attending, each year, two or three national gatherings, devoted to one's special branch of medicine, it may be questioned whether such overcrowding of a program is any less disadvantageous to scientific progress and advancing personal knowledge. Perhaps the increased number and support of local special societies is the best remedy for too numerous, or overcrowded national organizations.

The different subjects presented at this meeting are noted under appropriate headings in Current Literature. As might have been expected at a meeting held in Jena, physiologic optics and optical instruments claimed a good deal of attention. There were ten papers on such subjects given at one session. There are also several papers dealing with questions of physiologic chemistry, and a group of four that discuss phases of tuberculosis in relation to the eye. Cataract and glaucoma are not neglected. On the whole, however, this series of papers and discussions covers a wide range of topics. It shows considerable activity among German ophthalmologists—a determination to do all they can under favorable and discouraging circumstances. The opening speeches of the meeting by Uthoff of Breslau, The Dean of the Medical Faculty, and Brueckner, Professor of Ophthalmology in the medical faculty of Jena, expressed the same spirit and extended a cordial welcome.

E. J.

Transactions of the Ophthalmological Society of the United Kingdom and Affiliated Societies. Vol. XLII. Session 1922, with list of officers, Members, etc. 462 pages, 10 plates and 18 illustrations in the text. London, J. and A. Churchill, 1922.

This volume includes a discussion of industrial diseases, 34 pages, and 30 communications presented to the Annual Congress of the Society. There are also sixty-two communications that were presented to five of the six affiliated societies. The Midland

Ophthalmological Society furnishes just as many papers as the Annual Congress; five papers come from the Ophthalmological Society in Egypt; and the longest discussion, on the significance of retinal hemorrhage, from the Oxford Congress. The Ophthalmological Society of the United Kingdom has a membership scattered thruout the world. One paper presented to the Annual Congress was by a member living in South Africa, and other members living in South Africa, India and Australia, took part in its discussions.

In various ways this volume is as representative of British ophthalmology, as the volume reviewed above is of German. Its distinguishing characteristic is the solid practical value of what it contains. The transactions of all the national societies devoted to ophthalmology are well worth having, they furnish a most valuable part of current ophthalmic literature; but among them the British must be ranked as having the highest value, for the largest circle of those engaged in ophthalmic practice. This volume contains no Bowman Lecture. This will be missed. The lecturer already chosen for 1923 is Dr. George E. de Schweinitz. At the opening of the 1922 congress, the Edward Nettleship prize was presented to Dr. H. M. Traquair, of Edinburgh, for his work on "Bitemporal Hemianopsia".

To Americans, some of the subjects discussed in this volume are very familiar, altho they are unusual in the programs of European societies, among them are "hyperphoria" and the "use of cycloplegics." The latter discussion occupies, with two exceptions, the largest space in the volume; and naturally on these subjects American work is recognized as authoritative.

In this volume there are no colored plates and the number of illustrations is not as large as in some preceding volumes. Apparently the expense of such things is too great to allow their more general employment. From the item for illustrations in the report of the Hon. Treasurer, they would seem to be about as expensive in Great Brit-

ain as in the United States. A special fund started to supply illustrations has not yielded what was hoped of it. This volume can be bought of the publishers for little if any more than the cost of publishing it. Every English reading ophthalmologist needs it. It is a good service to our profession, to call the attention of our colleagues to its value.

E. J.

Stilling's Pseudo-Isochromatische Tafeln zur Prüfung des Farbensinnes. Herausgegeben von Prof. Dr. E. Hertel. 16 Auflage. 5 pages of text and 29 color plates. Leipzig, Georg Thieme, 1922.

Stilling's pseudoisochromatic plates for testing the color sense are widely known, and still found useful in the practical testing of color blindness. Any particular edition of them depends for its value on the careful selection of the colors that are to be used together on each plate, and on their permanence. In this form, of a small book with one test plate on each page, they are easily used; and easily kept clean and preserved from change by exposure to light. Hertel's own work with the late Professor Stilling at Strasburg has fitted him for choice of the best form, for carrying out the idea underlying the test.

The text consists of a brief introduction, in which it is pointed out that two of the plates have been revised; and a short description of the way the tests are to be used. They are divided into twelve groups. Groups I to IV and VI to VIII are to test red green blindness. Groups IX and X are for yellow blue blindness. Group V serves for either color defect. A person who cannot read any plate of these ten groups is totally color blind.

Each plate is covered with small circles of color of various sizes and shades. Circles of one color make a back ground; and circles of a color likely to be confused with it form the figures of a number, which cannot be read by the color blind, but is quite readily recognized at a little distance by those who have good color perception.

E. J.

OFTALMOLOGIA TROPICAL. Dr. Robert H. Elliot. (London.) Translated into Spanish by Dr. Francisco M. Fernandez. 8 mo. 547 pages. 123 illustrations and 7 color plates. Published by "Revista Cubana de Oftalmologia," Habana, 1922. (See also p. 242.)

Dr. Elliot's Tropical Ophthalmology has already been reviewed in these columns, but our numerous Spanish readers will certainly be glad to know that a translation into their language, has just been issued by Dr. F. M. Fernandez, the energetic and successful editor of the *Revista Cubana de Oftalmologia*.

The book opens with a prologue by Dr. Juan Santos Fernandez, the pioneer Cuban ophthalmologist and eminent writer, recently lost to the profession, in which he undertakes a sort of parallel between tropical diseases as described by Elliot, and those he found in his extensive practice in this continent.

The presentation of the book is excellent, and the printing, paper, and binding are a credit to the publisher. The translation itself is very good and the Spanish quite correct, something which can not be said of some Spanish translations of medical books. It is regrettable, however, that the proof reader has passed over many typographic errors, which undoubtedly will be easily corrected in another edition.

Although the conditions in India are quite different from tropical America, socially as well as medically, a book such as the one Dr. Elliot has written, will be of great interest and importance for the ophthalmologists in Mexico, and Central, and South America, who are confronted by many of the diseases and problems so masterly treated in this work.

It is to be hoped that the large clinical and scientific material accumulated in Latin America, now scattered and almost lost in many journals, will be utilized and collected in a similar publication, thus completing the tropical ophthalmology of the world.

M. URIBE TRONCOSO.

Diseases of the Ear, Nose and Throat, Medical and Surgical, by Wendell Christopher Phillips, M.D., Sixth Revised Edition, published by F. A. Davis Company, Philadelphia, 1922.

The sixth edition of this splendid text-book presents many items of new material. The operative treatment of cancer of the larynx has been extensively changed. The chapters on suspension laryngoscopy, bronchoscopy, and esophagoscopy have been revised under the supervision of Drs. Lynch and Jackson. There has been introduced a concise description of the audiometer test for hearing, and the author states that without a doubt the use of this instrument will advance the knowledge of the acoustics of the ear and correct many misconceptions now held by aurists. The chapters on diphtheria, syphilis, asthma, and hay-fever have been brought up-to-date. There is a timely reference to the community service work for the deaf. The author states in the preface that his purpose has been to write a practical, accurate and concise treatise, bearing the approval of his personal experience. This expresses well the spirit of this excellent text, for in most of the subject matter there is clearly shown the firm impressions gained from a wide practical experience. The major interest of this text is placed upon diseases of the ear, this portion comprising about one-half of the entire volume. This is complete and strictly up-to-date, except that portion dealing with the Eustachian tube, which shows that the author is not converted to the many advantages of the nasopharyngoscope, for working in the epipharynx. The section on the influence of general diseases is splendid.

There will be hearty disagreement by many good specialists with some of the dictums laid down concerning the nasal accessory sinuses, especially the maxillary sinus. After radical operation on this sinus, the author advises packing with gauze for three weeks. Most of us use no packing at all, and thus save our patients untold suffering. The chapters on the larynx are

very complete and ring true to a wide practical experience. The sections on bronchoscopy and esophagoscopy are arranged as a sort of preface to larger works on this specialty.

The author is to be complimented on the fact that he wastes no great effort by words, or illustrations in attempting to *teach* the technic of operations. This of course must be done not in the text-book but in the operating room. This volume can be highly recommended not only to students but also to those practicing this specialty, because it contains so much of Dr. Phillips' personal experience.

JOHN H. HARTER.

CORRESPONDENCE.

Intermediary Hosts, Tabanidae, and Bed-Bugs, in Trachoma.

To the Editor:

The letters of Drs. H. B. Young and Myles Standish in the December issue are naturally of special interest to me, since so far as I know, I was the first to advance and publish (Oph. Record, Sept. 1908) the theory that trachoma is communicated to humanity by insects functioning as intermediary hosts, or as transmitters (carriers), etc.

As regards Dr. Young's paper (Trans. Am. Acad. Oph., 1920, p. 196) he has inadvertently clouded his contention by inaccurate use of technical terms. For example: "It should not be forgotten that the fly, long suspected as a common carrier, may really be the intermediary host." The common house fly is not, under any circumstances, an intermediary host. Bacteriologists and protozoologists unanimously restrict the term to those insects in whose bodies the ingested microorganisms undergo a morphologic change. Thus in malaria and yellow fever the mosquito is a typical intermediary host. He states that "the disease trachoma has been confined to narrower and narrower limits to a degree not accounted for by any sanitary measure inaugurated to that end," apparently ignoring even the barring of all immigrants having the disease, by this country.

Gladly dropping the role of critic, I cordially agree with Dr. Young that window screens have been a not unimportant preventive factor, for I learned in Kentucky that in the daytime house flies settle on the pus-covered lid margins of sleepers, especially of children, who are trachomatous. He refers to my "failure to establish a connection between equine conjunctivitis and trachoma thru the tabanidae." (Am. Jour. Ophthal., June, 1920.) This I freely admit, but I desire nevertheless, to state that the horse fly (Tabanid) undoubted villain as he is, (for example, as a carrier of anthrax,) has, so far, been found guilty of implication as an intermediary host of only one disease; that of the loa worm (filaria). (Chandler, "Parasites and Human Disease," 1918, p. 489.)

Dr. Young concludes: ** "there is no proof that the house fly by mere contact spreads the disease; there is no proof that it spreads thru interhuman contact" (!) I think the doctor might change his opinion if he spent some months in the Kentucky Highlands.

An important point was mentioned in the discussion of Dr. Young's paper, by Dr. Stucky, i.e., that trachoma is positively contagious in the *inflammatory stage*. In the absence of a superadded mixed infection, trachoma is ordinarily but mildly, if at all, infectious. In 1910 (Ophth. Record) I wrote: "My own clinical experiences lead me to doubt whether infection can occur, thru biting and nonbiting insects as disseminators, when there are no bacteria (mixed infection) in the ocular discharge." I submit Dr. Stucky's and my own statements as at least approximate answers to Dr. Young's challenge in his letter (Am. J. Oph., Dec. 1922): "I am still awaiting a better explanation for the complete subsidence of trachoma in the 6 families where, on the interhuman contact theory, it should have been widely disseminated." The article "Trachoma" (Vol. XVII, p. 12877, Amer. Encyclopedia of Ophthal.) states: "A trachoma which is kept in check by systematic treatment possesses slight power of contagion."

Dr. Myles Standish's tentative theory that the bed-bug is the guilty insect I welcome as a promising clue in the etiology of trachoma. While, like the tabanids, the bed-bug has been convicted of being an intermediary host in the case of but one disease (thru *Trypanosoma Cruzi*), i.e., Chagas' disease, that he may act as a mechanical spreader of various diseases, is unquestionable. (Chandler.) He is one of many insects that transmit as carriers, either thru bite, or thru the stomach contents and feces (as when smashed); there being no change in the morphology of the microorganism (protozoon or bacterium) while in the insect.

The bed-bug bites generally under cover, (but sometimes bites the face), and deposits his feces on the clothing, usually. I have obtained no evidence that he ever bites the eyelids, and moreover, his normal food is human blood. A trachomatous person, having eye secretion on his fingers, and scratching a bed-bug bite would leave the secretion there, and possibly it might be ingested by the bed-bug and the virus appear in the feces.

Dr. Standish remarks: "I have had under my care single cases of trachoma in well-to-do, cleanly families, when the disease persisted a year or more in the affected person, yet no other contracted the disease. That this was due to care may have been the case, but when we consider how acute conjunctival and other infections, which are conveyed by discharges from the eyes and nose, spread in similar families, I am not inclined to accept that explanation."

What I quoted above, that a trachoma kept in check by systematic treatment has slight power of contagion, is, I believe a common experience of oculists who have treated large numbers of the trachomatous. Certain views of Fuchs are also opposed to Dr. Standish's contention. He says: "the existence of an acute infection in pure trachoma, i.e., without mixed infection, cannot *altogether* be excluded. Experiments in the transfer of a pure trachomatous secretion to man have *sometimes*, after an incubation period of 8 to 10 days, resulted in the outbreak of trachoma with inflammatory symptoms." [Italics mine.]

(Fuchs-Duane, 7th Ed., 1923, p. 468.) However, it is to be hoped that proper inspection of steamers, logging camps, etc., for the bed-bug may become a part of the regular duties of State Boards of Health, and of the U. S. Public Health Service in regard to the possible relations of that insect to trachoma.

F. B. EATON.

440 Post St.,
San Francisco, Calif.

Correction of Terms

Dr. Alexander Duane has called my attention to the fact that two of the terms used in my paper on Parinaud's Conjunctivitis (American Journal of Ophthalmology, October 1918) are incorrectly spelled. He has pointed out that the plural of "leptothrix" is leptotriches," and not "leptotriches," the term used by me, and that I should have used the term "leptotrichosis" instead of leptotrichosis."

Very truly yours,

F. H. VERHOEFF.

Boston, Mass.

ABSTRACTS.

Li, T. M. Trachoma in China. National Medical Journal of China. Vol. 8, March, 1922, page 1.

Li states that "Trachoma is the most common disease of the eye and is universally found in China. In South China it is estimated that about 15 to 20 per cent of the population are affected with it; in North China not less than 50 per cent. In the eye clinic fully 65 percent of the cases come because of trachoma or its complications. It is found in all classes of society, among foreign residents as well as Chinese. The members of the Department of Ophthalmology of the Peking Union Medical College examined several hundred mechanics and construction workmen of the college, and the children of three orphanages in the city. Out of a total number of 1,475 examined, 860, or 58.3 per cent, were found to have trachoma."

The widespread nature of this disease among the general public in China is due to the lack of government or pro-

vincial public health control of infectious diseases in general, ignorance of the infectious nature of trachoma, lack of personal hygiene, the indiscriminate use of the common towel, basins, and various household utensils. We all know how general is the Chinese custom of using hot towels in restaurants and theaters, and also while traveling by train or steamer. Among schools and public institutions failure on the part of the authorities to have any regulations, or to enforce them if they do have, for the examination of the eyes of all applicants for admission into their schools as students, teachers, or servants, is a large factor in further disseminating this disease.

From frequent observations of children closely associated, as in orphan asylums, it is the experience that trachoma usually has an incubation period of from three to five days. Trachoma may fully develop in as short a time as two or three weeks, and then of course can be positively diagnosed.

Li feels that the classification of the various stages of trachoma should be simplified, and proposes a division into the following three stages, which he describes in considerable detail:

1. Follicular stage. 2. Hyperplastic stage. 3. Cicatricial stage.

H. J. H.

Sachs, M. Protrait and Reality. *Wien med. Woch.*, 1921, No. 24, p. 1079.

The phenomenon is well known that certain protraits seem to look at the observer. Even if the latter changes his position from one side to the other, he has the sensation that the protrait follows him with its glance.

This sensation is bound to the sensation that the head of the observer is rotated simultaneously. This state of affairs is a hallucination; the condition is brought about thru failure of parallax displacement.

H. A.

Salzmann, M. Hereditary Detachment of the Retina. *Wien. med. Woch.*, 1921, No. 24, p. 1082.

Salzmann gives the history of detachment of the retina in a boy, aged 16 years, whose case was especially re-

markable; 1. By the appearance of the detachment in a comparatively low nondeleterious myopia. 2. The early appearance of the detachment (14-16). 3. Thru the benign course it ran; and 4 that the detachment in the son was a true copy of the detachment the father had 30 years before.

H. A.

Sattler, H. Retrobulbar Optic Neuritis in Exophthalmic Goitre. *Wien. med. Woch.*, 1921, No. 24, page 1084.

Sattler's case of retrobulbar neuritis had no symptoms of exophthalmic goitre until iodid of potassium was administered, when some of the classic signs of Basedow's disease developed. Partial thyroidectomy was made. Recession of the exphthalmos and other symptoms, with improvement of vision resulted.

H. A.

Rossi. Uveitis of the Menopause with Hypoadrenalinism. *Arch di Ott.*, 1922, v. 29, p. 241.

Rossi saw two cases in whom a stormy menopause with constitutional signs of ovarian insufficiency was associated with severe uveitis. The first case, a woman of forty, showed excessive pigmentation around the lips and eyes, the white line of Sargent, supposed to indicate hypoadrenalinism, and gave a severe reaction to a pilocarpin injection. The adrenalin test was negative. At the time of her menopause, she had a severe uveitis with dense vitreous opacities and foci of fresh choroiditis. She recovered during two months of treatment with atropin, dionin, and daily injections of ovarian extract and adrenalin.

The second case, a woman of fifty-one, showed similar hyperpigmentation, with a distribution of fat suggestive of hypoadrenalinism but without the Sargent white line. The reactions to pilocarpin and adrenalin were the same as in the first case. At the time of her menopause, it was associated with very painful periods, nausea, vomiting, and headache. She developed severe uveitis, the vision of the left eye was lost, and that of the right eye later was decreased to 1/50. Besides local treatment, she

was given ovarase and adrenalin by mouth regularly for four months, during which time the vision improved to one-fourth in the right eye and menstruation was resumed.

The author reviews the work of other observers, most of whom have not considered other changes of the body, due to the glandular insufficiency. Besides the disturbances due to absence of ovarian secretion, a general disequilibrium

occurs between the other remaining glands and produces wide spread disturbances of the cellular economy. It is suggested that the catabolic phase of metabolism in these patients, by which the products of cell destruction are removed, is lower and the accumulation of these cells produces inflammation. The eye being largely a vascular and nervous structure, it is especially subject to such influences. S. R. G.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. They should be sent in by the 25th of the month. The following gentlemen have consented to supply the news from their respective sections: Dr. Edmond E. Blaauw, Buffalo; Dr. H. Alexander Brown, San Francisco; Dr. V. A. Chapman, Milwaukee; Dr. Robert Fagin, Memphis; Dr. M. Feingold, New Orleans; Dr. Wm. F. Hardy, St. Louis; Dr. Geo. F. Keiper, LaFayette, Indiana; Dr. Geo. H. Kress, Los Angeles; Dr. W. H. Lowell, Boston; Dr. Pacheco Luna, Guatemala City, Central America; Dr. Wm. R. Murray, Minneapolis; Dr. G. Oram Ring, Philadelphia; Dr. Chas. P. Small, Chicago; Dr. John E. Virden, New York City; Dr. John O. McReynolds, Dallas, Texas; Dr. Edward F. Parker, Charleston, S. C.; Dr. Joseph L. McCool, Portland, Oregon; Dr. Richard C. Smith, Superior, Wis.; Dr. J. W. Kimberlin, Kansas City, Mo.; Dr. G. McD. Van Poole, Honolulu; Dr. E. B. Cayce, Nashville, Tenn.; Dr. Gaylord C. Hall, Louisville, Ky.; Dr. Edward D. LeCompte, Salt Lake City.

DEATHS.

Dr. Thomas O. Edgar, of Dixon, Illinois, died March 5th, aged 52 years.

Dr. Charles Victor Fisher, of Klamath Falls, Oregon, died January 19th, aged 52 years.

Dr. John R. Hoffman, of Chicago, Illinois, aged 57, died February 19th, of thrombosis.

Dr. Francis B. Loring, of Washington, D. C., aged 72, died January 14th.

Dr. F. Schanz, an ophthalmologist and writer on ophthalmology, of Dresden, Saxony, died recently.

PERSONALS.

Dr. F. M. Fernandez, of Havana, has been elected a corresponding member of the Caracas Medical Society.

An announcement of the marriage of Dr. Joseph S. Lichtenberg and Mrs. Eva W. Case, of Kansas City, Missouri, has been received.

Dr. Herbert J. Scott announces his association with Dr. Frederick T. Clark, Parks Bldg., Westfield, Massachusetts. Practice limited to eye, ear, nose and throat.

Dr. Frank Allport, of Chicago, is spending the winter months in St. Augustine, Florida. He expects to return about the middle of April.

Prof. G. Elliot Smith gave the Montgomery Lecture on "Movements of the Eye" before the Royal College of Surgeons in Ireland, January 29th.

Dr. John Green, Jr., of St. Louis, was guest of the Indiana Academy of Ophthalmology

and Oto-Laryngology, on January 17th; and delivered an address on "Factors of Safety in the Operation for Cataract."

After many years of distinguished service, Professor Jiuro Komoto of the Imperial University, Tokyo, Japan, has resigned the chair of ophthalmology in that institution because of ill health, the resignation to take effect on the last day of March. He will be succeeded by Dr. Ishiwara.

Dr. M. Paul Motto, until recently associate in the ophthalmologic division of the New York Post-Graduate Medical School and Hospital, announces the opening of his office at 550 Rose Building, Cleveland, Ohio. Since his return Dr. Motto has been appointed to the eye service of the Lakeside and Mount Sinai Hospitals.

Professor Fuchs, of the University of Vienna, arrived at Tokyo about the end of September, where he remained for a month. There he delivered two lectures: "Arteriosklerose der Augen" and "Tabetische Augensymptomen." From Tokyo he went, by way of Korea and Manchuria, to Peking, where he lectured for four weeks in the Peking Union Medical College.

While stopping in Manila on his world tour, Professor Fuchs was appointed visiting professor by the University of the Philippines thru the suggestion of the Professor of Ophthalmology and the Dean. He gave a series of lectures on the pathology of the eye from January 8th to January 19th, Dr. A. S. Fernando assisting in the projection of the

slides on the screen. There was a large attendance at all these very instructive lectures. A reception was given in his honor by the members of the college faculty.

SOCIETIES.

At the January meeting of the St. Louis Ophthalmic Society the following officers were elected: President, W. A. Shoemaker; vice-president, J. W. Charles; secretary-treasurer, N. R. Donnell; editor, Lawrence Post.

The American Academy of Ophthalmology and Oto-Laryngology will meet in Washington, D. C., October 15 to 20, inclusive. Thomas E. Carmody, of Denver, is president, and Luther C. Peter, of Philadelphia, secretary.

The Louisville Eye and Ear Society held its annual meeting January 19th, at the Pendennis Club. Dr. Harry Gradle, of Chicago, was the guest of honor and addressed the society on "Practical Perimetry for Every Day Use."

At the joint meeting of the Chicago Medical and Chicago Ophthalmological Societies, March 7th, Dr. George E. de Schweinitz delivered an address "Concerning Practical Co-operative Work Between Medical and Surgical Practitioners and Ophthalmologists."

The Eastern New York Eye, Ear, Nose and Throat Association was recently organized. Meetings will be held on the third Wednesday of each month, alternately in Troy, Albany, and Schenectady. The officers are: President, Dr. Eugene E. Hinman of Albany; vice-president, Dr. John J. O'Brien of Schenectady; secretary-treasurer, Dr. Frank M. Sulzman of Troy.

At the annual meeting of the Indiana Academy of Ophthalmology and Oto-Laryngology, in Indianapolis, January 18th, the following officers were elected: President, Dr. C. Norman Howard, Warsaw; vice-presidents, Drs. A. L. Marshall, Indianapolis, and R. W. Cochran, Madison; secretary-treasurer, Dr. B. J. Larkin, Indianapolis. Dr. John Green, Jr., St. Louis, addressed the meeting.

The Chicago Ophthalmological Society and the Chicago Laryngological Society have planned a joint clinical meeting to be held in April. On Monday, April 16, all of the eye clinics in Chicago will hold open house for visitors, presenting material for diagnosis, as far as possible. That evening there will be a joint dinner of the two societies with one ophthalmic paper and one oto-laryngologic paper. On Tuesday, April 17, the ear, nose, and throat clinics will hold sway all day. Formal invitations have been sent to all of

the special societies within a radius of five hundred miles of Chicago; but any confrere will be made welcome, regardless of a formal invitation. For those two days, there will be an information booth in the lobby of the Hotel Sherman for the benefit of visiting colleagues.

MISCELLANEOUS.

The New York Association for the Blind was left \$25,000 and a share in the residuary estate, under the will of Mrs. Sarah J. Robinson.

St. Joseph's Association for the Blind, Jersey City, receives \$5,000 from the will of the late John W. Rapp.

George Weinman, a twenty-three year old student at Northwestern University, in spite of the handicap of blindness, has won more scholarship honors than were ever before bestowed on one student in a year. He mastered the Braille system in the Chicago public schools, and his books and lessons are read to him by his mother.

Reports were made and new officers elected at the forty-first annual meeting of the Pennsylvania Home Teaching Society and Free Circulating Library for the Blind in Philadelphia. A fund for establishing a "Moon Publishing House" in Philadelphia was appropriated. It will be the first printing establishment in America to use this special kind of raised type. Among the officers elected were: President, Dr. L. Webster Fox; and secretary, Isabel W. Kennedy.

Dr. Sofie A. Nordhoff-Jung, of Washington, District of Columbia, United States of America, has founded an annual prize of five hundred dollars bearing the title of "The Sofie A. Nordhoff-Jung Cancer Research Prize." This prize is destined for the encouragement of researches in the etiology, prevention and treatment of cancer. It will be awarded by a commission, composed of members of the University of Munich, Bavaria, and be granted for the first time in December in the year nineteen hundred and twenty-three. The commission consists of professors Borst, Doederlein and Sauerbruch, with Professor von Romberg as chairman. This body is empowered to elect successors. The award will be made as a recognition of the most conspicuous work in the world literature bearing on cancer research, done at a time antecedent to the allotment of the award. Tho the prize will not be awarded on a competitive basis, the commission invites all research workers in cancer to submit literature on this subject.

Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in **heavy-face type**. The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is an abstract of the original article. (Bibl.) means bibliography and (Dis.) discussion published with a paper. Under repeated titles are given additional references to papers already noticed. To secure early mention, copies of papers or reprints should be sent to 217 Imperial Building, Denver, Colorado.

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- Nesfield, V.** Ophthalmic Surgery. 172 pages, 22 illustrations. H. K. Lewis, London. Brit. Jour. Ophth., 1923, v. 7, p. 108.
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